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Robert Kirk — Indiana's Economic Performance: A Comparison

Graham Toft — Providing Public Facilities to Support Economic Growth

Richard B. Finch — Why There Will Be No Recession

## in this issue...

The performance of the Indiana economy is of continuing interest. Professor Robert Kirk gives us an overview of how we are doing, without the positive or negative distortion of this fall's campaign rhetoric.

How our economy will perform in the future may well be a function of the condition of our state's infrastructure. Graham Toft shares with us the perspective of the state's long-range strategic plan for this vital component of our future.

In the next issue of the *IBR* we will learn what our faculty think will happen, economically, in the year ahead. Some economists believe we may be heading toward a recession. But Richard Finch suggests (with tongue in cheek) that a recession can be averted by reliance on our nation's secret economic weapon.

In a special insert, Indiana University President Thomas Erlich provides us with comments on the relationship between the future of this state and the role of our University in advancing the good prospects we seek for ourselves in the years ahead.

MJM

# Indiana's Economic Performance: A Comparison

**Robert Kirk**

*Professor of Economics, Indiana University-Purdue University at Indianapolis*

Indiana's economy has been characterized by some as in the midst of a remarkable renaissance, and by others as in the Dark Ages in need of a renaissance. The reality, of course, is somewhere in between, but exactly where does it fall? In other words, how well *has* the Indiana economy performed?

*In Indiana there were large declines in steel and auto employment during the 1980s, but labor productivity increased substantially in these industries.*

In this study we try to find out. We compare Indiana's economy to that of the U.S. and the Great Lakes region (Illinois, Indiana, Michigan, Ohio, and Wisconsin) from 1969-87, by comparing rates of change in total labor earnings[1] in the Indiana economy with either the U.S. or the Great Lakes region economy. Labor earnings, not employment, is used because the earnings measure comes closer to measuring output; it captures some of the increases in labor productivity. Manufacturing employment as a percent of total employment has declined steadily in the U.S., but manufacturing output as a percent of total output has remained relatively constant. In Indiana there were large declines in steel and auto employment during the 1980s, but labor productivity increased substantially in these industries. The earnings data have been adjusted by appropriate price indices to account for inflation.

If a state's rate of change in a particular sector is greater than the nation's rate, then the state has increased its share of national earnings in that sector. If a state's rate is lower, the state's share has decreased. Since the time period of the analysis includes four recessions, a state can increase its share if its rate of decrease is less than the national rate. The same observations hold when comparing Indiana to the Great Lakes region.

### Interstate Comparisons

The durable goods sector, illustrated in the **Figure**, is used as an example of the analysis. From 1969-79, comparisons are made from business cycle peak to peak. After 1979, annual rates of change are compared. The Figure indicates that from the peak of the business cycle in 1969 to the next peak in 1973, Indiana increased its share of the national durable goods sector because Indiana's rate of growth in real earnings was greater than the U.S. rate by 6.8 percentage points. From 1973 to 1979 (Indiana employment peaked in 1979 as auto industry layoffs began in the first quarter), Indiana's growth rate was less than the national rate by 7.6 percentage points; the severe impact of the 1973-75 recession on Indiana's durable goods sector caused the drop. Therefore, Indiana lost share in that period. The remaining bars represent annual changes in share. When the bar is above the zero line, Indiana gained share; when the bar is below, Indiana lost share.

**Tables 1** through **5** summarize these statistics for each of the five Great Lakes states for each major sector. The figures for each year, of course, are measured from different national rates of change. The states are ranked (1=greatest increase in share or least loss in share; 5=least increase in share or greatest loss in share) relative to the U.S. economy's (or Great Lakes economy's) rate of

**Figure**
**Indiana's Durable Goods Manufacturing Sector**
**Deviation in Rate of Change of Earnings from U.S. Rate, 1969-87**
**(in percentage points)**

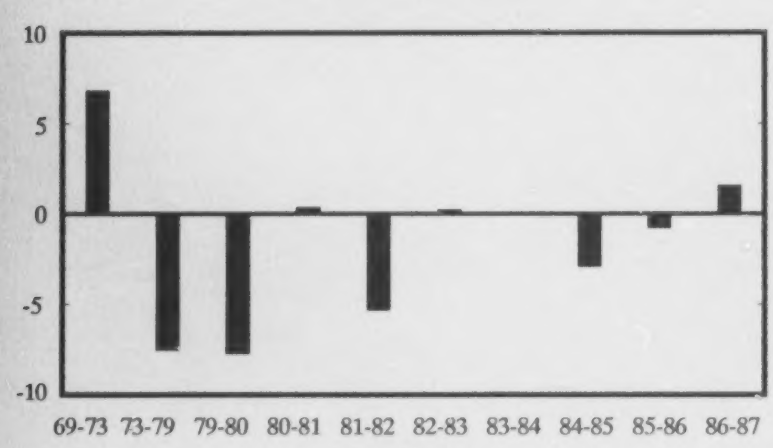


**Table 1**
**Durable Goods Manufacturing**
**State Rankings Relative to U.S. and Great Lakes Region**
**1969-1987 and 1979-1987**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *1969-87* | *1979-87* | *1969-87* | *1979-87* |
| Illinois | 5 (-.39) | 5 (-.29) | 5 (-.18) | 5 (-.13) |
| Indiana | 3 (-.16) | 3 (-.15) | 3 ( .05) | 3 ( .01) |
| Michigan | 2 (-.10) | 1 (-.08) | 2 ( .11) | 1 ( .08) |
| Ohio | 4 (-.27) | 4 (-.17) | 4 (-.06) | 4 (-.01) |
| Wisconsin | 1 (-.04) | 2 (-.12) | 1 ( .17) | 2 ( .05) |
| Great Lakes | (-.21) | (-.16) | | |

Summary statistic in parentheses.

change. The summations are computed over two time periods, 1969-87 and 1979-87, based on the assumption that in 1979 the U.S. economy began to face a more global and competitive world economy. Since the state's economy is compared to both the U.S. and Great Lakes, a state could lose share relative to the U.S. economy but gain relative to the Great Lakes economy.

**Durable Goods Manufacturing (Table 1)**

Compared to the U.S., the Great Lakes region and all states in the region lost share in both periods. Wisconsin and Michigan lost the least, followed by Indiana, Ohio, and Illinois. When compared to the Great Lakes economy, Michigan, Wisconsin, and Indiana gained share while Ohio and Illinois lost share.

*The analysis identifies no explanations. However, over the time period there were major shifts in population to the South and West. To the extent that firms are drawn by expanding markets, it is not surprising that the Great Lakes lost share to other regions.*

**Nondurable Goods Manufacturing (Table 2)**

The Great Lakes region lost share to the U.S. However, the loss was less than for durable goods manufacturing. Wisconsin and Indiana both gained share in both periods relative to the U.S., while Michigan was unchanged in both periods. When compared to the Great Lakes economy, Wisconsin, Indiana, and Michigan gained, while Ohio and Illinois lost share. Thus, for manufacturing in total (durables and nondurables), the region lost share. Wisconsin, Michigan, and Indiana performed more strongly than Ohio and Illinois.

The analysis identifies no explanations. However, over the time period there were major shifts in population to the South and West. To the extent that firms are drawn by expanding markets, it is not surprising that the Great Lakes lost share

to other regions. The recession and appreciation of the dollar in the early 1980s affected regions and industries differently. The Great Lakes region, with its specialization in motor vehicles, steel, and machine tools, was more adversely affected than other regions.

*Some of the loss in share in manufacturing has been due to the increased tendency of manufacturing firms to contract out certain functions to specialized business services firms.*

**Nonmanufacturing**

Some of the loss in share in manufacturing has been due to the increased tendency of manufacturing firms to contract out certain functions to specialized business services firms. For example, janitorial services formerly performed by employees on the manufacturing firm's payroll now are provided by a janitorial services firm whose employees are classified in the business services industry. The increase in new firms has created a demand for advertising, business consulting, and temporary help services. Some of these services may be provided for firms located outside the state's borders. In health services, hospitals have specialized; they therefore may draw patients from outside the state. Government deregulation has promoted interstate competition in financial services. Thus, the list of products in which the demand is generated from outside the state (called the export base of the state) has been expanded beyond automobile parts, steel plate, and machine tools to include business, health, and financial services. How have these nonmanufacturing sectors performed?

**Table 2**
**Nondurable Goods Manufacturing**
**State Rankings Relative to U.S. and Great Lakes Region**
**1969-1987 and 1979-1987**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *1969-87* | *1979-87* | *1969-87* | *1979-87* |
| Illinois | 5 (-.21) | 5 (-.10) | 5 (-.13) | 5 (-.07) |
| Indiana | 2 ( .01) | 2 ( .03) | 2 ( .08) | 2 ( .07) |
| Michigan | 3 ( .00) | 3 ( .00) | 3 ( .08) | 3 ( .04) |
| Ohio | 4 (-.10) | 4 (-.05) | 4 (-.02) | 4 (-.02) |
| Wisconsin | 1 ( .12) | 1 ( .05) | 1 ( .20) | 1 ( .09) |
| Great Lakes | (-.08) | (-.03) | | |

Summary statistic in parentheses.

**Table 3**
**Services**
**State Rankings Relative to U.S. and Great Lakes Region**
**1969-1987 and 1979-1987**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *1969-87* | *1979-87* | *1969-87* | *1979-87* |
| Illinois | 5 (-.18) | 1 (-.08) | 5 (-.02) | 1 ( .02) |
| Indiana | 2 (-.15) | 2 (-.09) | 2 ( .01) | 2 ( .01) |
| Michigan | 3 (-.16) | 5 (-.12) | 3 ( .00) | 5 (-.02) |
| Ohio | 4 (-.16) | 3 (-.10) | 4 ( .00) | 3 ( .00) |
| Wisconsin | 1 (-.06) | 4 (-.12) | 1 ( .10) | 4 (-.02) |
| Great Lakes | (-.16) | (-.10) | | |

Summary statistic in parentheses.

**Services (Table 3)**

The two major components of services are business services and health services. Compared to the U.S., the Great Lakes region and all its component states lost share in both periods. Illinois jumped from 5th to 1st in the 1979-87 period. When the comparison is with the Great Lakes economy, Illinois' performance switched from a loss in share in the 1969-87 period to a gain in share for the more recent period. Wisconsin, on the other hand, gained share in the 1969-87 period but lost in the most recent period. The range of the summary statistic is generally

**Table 4**
**Finance, Insurance, and Real Estate**
**State Rankings Relative to U.S. and Great Lakes Region**
**1969-1987 and 1979-1987**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *1969-87* | *1979-87* | *1969-87* | *1979-87* |
| Illinois | 1 (-.05) | 1 (-.04) | 1 ( .16) | 1 ( .10) |
| Indiana | 4 (-.36) | 4 (-.25) | 4 (-.14) | 4 (-.11) |
| Michigan | 5 (-.37) | 5 (-.26) | 5 (-.15) | 5 (-.12) |
| Ohio | 3 (-.35) | 3 (-.18) | 3 ( .14) | 3 (-.04) |
| Wisconsin | 2 (-.12) | 2 (-.17) | 2 ( .09) | 2 (-.03) |
| Great Lakes | (-.22) | (-.14) | | |

Summary statistic in parentheses.

**Table 5**
**Wholesale Trade**
**State Rankings Relative to U.S. and Great Lakes Region**
**1969-1986 and 1979-1986**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *1969-86* | *1979-86* | *1969-86* | *1979-86* |
| Illinois | 4 (-.20) | 2 (-.08) | 4 (-.01) | 2 (-.01) |
| Indiana | 2 (-.13) | 5 (-.13) | 2 (-.06) | 5 (-.04) |
| Michigan | 5 (-.22) | 1 (-.05) | 5 (-.03) | 1 ( .04) |
| Ohio | 3 (-.20) | 3 (-.10) | 3 (-.01) | 3 (-.01) |
| Wisconsin | 1 (-.08) | 4 (-.12) | 1 ( .10) | 4 (-.04) |
| Great Lakes | (-.19) | (-.09) | | |

1987 data not available.
Summary statistic in parentheses.

small, suggesting less variation in performance compared to manufacturing. No doubt Chicago played a role in Illinois' performance.

**Finance, Insurance, and Real Estate (Table 4)**

The Great Lakes region and all the states lost share in both periods. Illinois and Wisconsin lost less in the 1969-87 period compared to other states; Illinois lost the least in the 1979-87 period. When compared to the Great Lakes economy, Illinois and Wisconsin gained share in 1969-87, and only Illinois gained share in the 1979-87 period. Again, the importance of Chicago's role should be noted.

**Wholesale Trade (Table 5)**

Given Indiana's good spatial position relative to major markets, it is important to examine wholesale trade. Compared to the U.S., the Great Lakes region and all states lost share. The states' relative position changed substantially between the two time periods. Indiana ranked 2nd over the 1969-86 period but fell to 5th in the more recent period. Michigan, on the other hand, was 5th over the 1969-86 period but rose to 1st in the more recent period. Within the Great Lakes region, Indiana lost share while Michigan gained share over the 1979-86 period.

*Compared to the U.S., the Great Lakes region and all states lost share. The states' relative position changed substantially between the two time periods. Indiana ranked 2nd over the 1969-86 period but fell to 5th in the more recent period.*

**Depreciation of the Dollar**

How have the Great Lakes economy and its component state economies benefited from the depreciation of the dollar that began in 1985? The rates of change, 1986-87, for durable and nondurable goods manufacturing are examined in **Table 6**. (The 1986-87 period is used because of the lag in the effects of depreciation.)

The Great Lakes region lost share in durables and (slightly) in nondurables. However, Indiana gained share in both durables and nondurables relative to the U.S., ranking 2nd in durables and 1st in

nondurables. Indiana's gain in share relative to the Great Lakes region was even greater. One observation does not make a trend, but the initial results are encouraging for Indiana.

**Conclusions**

The most obvious conclusion is that Indiana has lost its share of several business sectors because it is part of the Great Lakes region--a region which as a whole lost share over the time period of the analysis. Several reasons have been suggested for this loss, including regional population shifts and a national fiscal policy that contributed to an appreciation of the dollar.

**Table 6**
**Durable and Nondurable Manufacturing**
**States Relative to U.S. and Great Lakes Region**
**1986-87**

| | *Relative to:* | | | |
|---|---|---|---|---|
| | *U.S.* | | *Great Lakes* | |
| *State* | *Durable* | *Nondurable* | *Durable* | *Nondurable* |
| Ilinois | 3 (-.010) | 5 (-.011) | 3 ( .010) | 5 (-.007) |
| Indiana | 2 ( .016) | 1 ( .014) | 2 ( .036) | 1 ( .018) |
| Michigan | 5 (-.050) | 4 (-.009) | 5 (-.030) | 4 (-.005) |
| Ohio | 4 (-.026) | 3 (-.006) | 4 (-.006) | 3 (-.002) |
| Wisconsin | 1 ( .026) | 2 ( .006) | 1 ( .046) | 2 ( .010) |
| Great Lakes | (-.020) | (-.004) | | |

Summary statistic in parentheses.

*For Indiana, the results are mixed. In nondurables and services the state has done relatively well. In durables it falls in the middle. In wholesale and finance-insurance-real estate it is toward the bottom.*

There were also shifts within the Great Lakes region. These shifts imply that state economies within the same geographic area responded differentially to the national shift. In manufacturing Illinois lost share; in finance, insurance, and real estate, it gained share while the other states lost. Thus, Illinois has gone through a significant shift in its economy.

For Indiana, the results are mixed. In nondurables and services the state has done relatively well. In durables it falls in the middle. In wholesale and finance-insurance-real estate it is toward the bottom. Table 6 reflects the most recent observations and indicates that Indiana manufacturing has gained share relative to the U.S. and the region. As time progresses it will be interesting to determine if this one observation is the beginning of a trend.

The design of strategies for improvement requires a more disaggregated level of analysis. Although the states studied are part of the same region, differences in industrial composition exist within the sectors and could explain the differential performance. Also, the differences in state performance reflect a variety of supply-side differences: infrastructure, human and natural resources, and energy and labor costs. During the 1980s the states have taken the initiative in the design of economic development strategies. It is expected that interstate competition will continue at both state and local governmental levels; Indiana's design will determine whether it increases or decreases its share of the nation's economy.

1. Labor earnings includes wages and salaries, employer contributions to private pension funds, and proprietors' income.

Indiana
University

# One University With Eight Front Doors

Dear Friends,

During the past year, faculty, students, and staff, as well as alumni and friends of Indiana University, have been engaged in a planning process to define our academic agenda as we approach the twenty-first century.

Our planning effort has proposed fifty-five initiatives that together constitute an ambitious agenda designed to propel a great institution into one of still greater distinction. Some of the proposals focus on opportunities and challenges confronting campuses individually. Others are University initiatives, reflecting the fact that, as one University, the whole is greater than the sum of its parts.

We have already begun implementing some of the initiatives; we expect that five or six years will be needed to complete all of them. Some do not require additional funding. While many do depend on new resources, we propose that less than half of the investment will come from the State of Indiana; the major share will be from private and federal sources and from University internal reallocations.

This academic agenda has shaped our budget request to the State for an increase of $85.5 million for the 1989-91 biennium. Our request calls for major investments in undergraduate education, in support of faculty as scholar-mentors, in our research enterprise, in our capacity to foster economic growth across the State, and in our ability to serve Hoosiers through access to higher education.

We invite you to review the following summary, which outlines our proposals for enhancing the quality of education and research at Indiana University and ultimately the quality of life in Indiana.

Cordially,

Tom Ehrlich

Thomas Ehrlich
President of Indiana University

# Campus Initiatives

## Undergraduate Education

Through undergraduate education—in both the liberal arts and the professions—Indiana University fulfills its first obligation to the State of Indiana. The University is committed to enhancing its undergraduate curriculum to provide students with the tools they need for living and working in a pluralistic, competitive, technological society. To achieve this goal, we plan to:

- expand the number of small-group seminars designed especially for first-year students and taught by faculty members.
- strengthen the basic skills of our undergraduates. We seek to enhance the curriculum in the areas of writing proficiency, foreign language proficiency and foreign culture awareness, and computer literacy.
- develop more general education courses, enhance undergraduate research opportunities, and expand senior seminars as key initiatives for enriching the major.
- promote meaningful, long-term faculty-student interaction by a variety of means, including reducing class sizes.
- increase significantly the number of minority faculty members.
- enhance equipment for chemistry and physics that will produce immediate benefits in the quality of instruction.
- reduce the University's reliance on part-time faculty.

## Research and Economic Growth

Among the most fundamental of university functions is the creation of new knowledge through research. Indiana's distinguished record in research has invigorated commerce and contributed to the welfare of all citizens by improving the quality of life across our State. In order to assure Indiana University's place as one of the major international centers of research, we must have the essential combination of top faculty, the best graduate students, and state-of-the-art facilities and equipment. To achieve this, we plan to:

- attract the most promising graduate students by significantly increasing support for those seeking advanced degrees.
- update equipment essential for first-class research in a modern university. Our goal is an annual academic equipment budget of 20 percent of total inventory, one half to come from State funds and the other from external grants and private contributions.
- continue recruiting distinguished scholar-teachers.
- offer the following new academic programs: a degree program in instrumentation science at Bloomington; undergraduate and graduate programs in cognitive science at Bloomington; master of science degree programs in electrical and mechanical engineering through the Purdue Graduate School at Indianapolis; a concentration in operations management on the Kokomo campus; and a master's program in economics at Indianapolis.

## Educational Access

Our commitment to provide educational access extends to all Hoosiers; to part-time students; to minority populations; to the economically disadvantaged; to women seeking to enter fields in which they have been historically underrepresented; to those whose physical handicaps impede access to the full range of educational opportunities; and to the very best students, a high proportion of whom now

attend universities outside Indiana. We plan to:

- increase the numbers of minority students participating in higher education. We have developed the Future Scholars Program that will focus attention on up to 400 Indiana sixth-grade students from disadvantaged backgrounds. The program's goal is to prepare and motivate these students so they will be able to obtain a university education.

- initiate a second-year medical education program at Fort Wayne to complete the Statewide System for Medical Education.

- expand the University's student support services, including psychological testing, individual and group counseling, and crisis intervention.

- offer an innovative "IU tuition futures" plan that will provide parents and their children a sound means to finance a college education at no extra cost to the State.

## University Initiatives

**Support to Attract and Retain Faculty and Staff**—Indiana University's plans for achieving the goals of its academic agenda depend on attracting and retaining the best faculty and staff. To keep our best faculty from being drawn away by attractive offers from other institutions, the University must be able to offer comprehensive and flexible packages of support.

**Library Acquisitions and Automation**—An outstanding library is a cornerstone of a great university. Indiana University is committed to modernizing its library system through computerization in the next decade and to providing a truly world-class collection of teaching and research materials. A 50 percent increase in the library's acquisitions budget is required over the next three biennia to remedy the effects of recent inflation and inadequate funding on our book and serial collections and to build adequate specialized collections in IU's strongest academic areas.

**Interactive Telecommunications**—We propose using advanced technology to develop a two-way interactive television system connecting all IU campuses. This innovative program will enable the University to expand course offerings, to combine faculty talents in team teaching, and to draw all campuses together as one University.

**Student Performance Assessment and Advising**—We are developing a comprehensive performance assessment program across the eight campuses to evaluate IU's writing programs, standards regarding placement and "testing out" procedures, major field programs, and student involvement. We are also working to improve the student advising system by increasing faculty involvement and expanding the computerized system for matching students' academic needs with course requirements.

**IU Connections**—New programs on our eight campuses will create associations and networks that will strengthen the research and instructional capabilities of all our faculty and will make the best use of expensive, specialized equipment and facilities.

**Maintaining the Base for the IU Plan**—The bold initiatives we have proposed will prepare both the University and the State for the challenges facing us as we approach the twenty-first century. But the success of these initiatives depends on a steady, reliable base of operations. Keeping up with the costs of basic items—such as facility maintenance, utilities, and personnel benefits—accounts for over half of Indiana University's budget request.

## Capital Appropriation Request

**All Campuses**—General repair and rehabilitation of academic/administrative facilities

**Bloomington Campus**—Renovation of the nine buildings in the historic Crescent area for classroom and laboratory space

**Indianapolis Campus**—University Library

**Indianapolis Campus**—Science/ Engineering Technology Building, Phase III

**East Campus**—Library/Classroom Building and associated remodeling

**Kokomo, Northwest, and South Bend Campuses**—Special repair and rehabilitation of library, classroom, laboratory, and computing facilities

**Southeast Campus**—Classroom/Office/ Theatre Building and related remodeling

**Indianapolis Campus**—Land acquisition

**Bloomington Campus**—Cyclotron addition: Ion Source Building

**Bloomington Campus**—Psychology Building addition and remodeling

**Indianapolis Campus**—Medical Science Building Renovation, Phase I

# We Are One University With Eight Front Doors

Four out of five Hoosiers live less than an hour's drive from at least one of Indiana University's eight campuses in Bloomington, Indianapolis, South Bend, Gary, Kokomo, New Albany, Richmond, and Fort Wayne. The University, with a combined enrollment of more than 85,000 students, also operates facilities in Columbus and Elkhart, as well as programs at numerous other sites. Of the University's more than 300,000 living alumni, 168,000 live and work in Indiana.

We invite your support for the ambitious academic agenda described in this publication—an agenda that will help both Indiana University and the State of Indiana meet the challenges of the twenty-first century. We encourage you to share your views on the needs of higher education with your legislators. Please call or write us with any questions you have about our initiatives for the future.

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# Providing Public Facilities to Support Economic Growth

**Graham Toft**

*Senior Vice President, Indiana Economic Development Council*

As a basic manufacturing-dominated economy, Indiana is an infrastructure-sensitive state. It has been quite reliant on its network of public works and public facilities. The state has maintained a strategic advantage through an extensive infrastructure base, particularly its highly developed transportation network.

In the 1950s and 1960s, Indiana spent at a more aggressive pace than much of the rest of the nation to complete its interstate highway system ahead of schedule, thus capitalizing on a geographic advantage. Indiana moved boldly to develop modern port facilities and airport connections while protecting its railroad network from being dismantled during the restructuring of the rail industry.

*Indiana moved a little less aggressively than some states in implementing strong environmental controls, and it also cut back on highway maintenance. Property tax limitations brought on cutbacks in local public works spending.*

In the 1970s and 1980s, however, the state's commitment to infrastructure development appeared to lessen; its rate of spending slowed. Indiana moved a little less aggressively than some states in implementing strong environmental controls, and it also cut back on highway maintenance. Property tax limitations brought on cutbacks in local public works spending. In 1985-86, per capita state and local funding on highways was $162. The national average was $205, and Indiana ranked 45th among the 50 states. In 1985, the Federal Highway Administration rated Indiana 31st on the condition of its interstate system, and in 1986 only 38th in the percentage of non-deficient bridges. In 1986, the Environmental Protection Agency ranked Indiana 35th in the dollar amount of current sewage treatment plant needs on a per capita basis (50th position representing the worst situation in all the above rankings).

Indiana's infrastructure base remains a competitive advantage. However, the state needs to strengthen its efforts toward maintaining a transportation network and improving environmental protection facilities. Major additional investments can be expected in solid and hazardous waste disposal, airports, and sewage and water treatment. In addition, more attention needs to be given to the development of civic amenities such as recreational and cultural facilities, historic restoration, and landscape design of public space.

The cost of housing in Indiana is very attractive. On the basis of average housing costs as a percentage of per capita income, Indiana ranks 4th in the nation (1st being the least expensive). Development of physical and cultural amenities to complement the "affordability" of the Hoosier life-style would pay significant dividends for Indiana. Public facilities and civic amenities not only serve the direct needs of business; they also provide higher quality of life to residents.

In short, Indiana needs to re-establish the importance of infrastructure as a competitive economic advantage. This applies to both transportation and environment. Currently, cost-benefit analysis speaks poorly of recent capital budgeting decisions at both state and local levels. Tough technical analysis will be required in the future to make sure every scarce infrastructure dollar is spent for beneficial economic development.

**A Strategic Goal: Financing and Managing Public Facilities as Long-Term Capital Assets**

In private business, capital facilities are treated as assets, not liabilities. The wealth of a business enterprise is measured in part by its stock of physical resources and properties. Expenditures that increase the value of those assets are viewed as investments. The public sector, on the other hand, has tended to treat infrastructure as a cost of doing business, a liability rather than an asset. Expenditures to maintain existing facilities or develop new ones are not offset on the balance sheet by increases in the value of capital assets.

*Since public assets often involve large sums of money, require many years to design and build, and may last for 100 years or more, they must be managed wisely over their life span. Such a life-cycle approach can run counter to political power.*

An asset-based, life-cycle approach to infrastructure planning would make financing and management more than simply an accounting adjustment. Instead, such an approach would drive important reforms in cost-benefit analysis, procurement, and the application of

improved technology to the design and construction of public facilities.

Since public assets often involve large sums of money, require many years to design and build, and may last for 100 years or more, they must be managed wisely over their life span. Such a life-cycle approach can run counter to political power. Moreover, neither state nor local governments have utilized life-cycle planning and budgeting techniques in the past to manage public assets over the long term. For example, units of government do not, as a rule, design capital improvement plans or capital budgets with spans of ten or more years.

*Since Indiana is a limited-government, low-tax, and low-debt state, abundant finances for capital projects will not be available. Creative solutions to designing, financing, and operating public facilities must be found.*

Governments need to manage soundly and efficiently the assets currently in place and invest wisely in new facilities according to life-cycle principles. Since Indiana is a limited-government, low-tax, and low-debt state, abundant finances for capital projects will not be available. Creative solutions to designing, financing, and operating public facilities must be found.

**Strategies for Change**

**Priority 1: Improve infrastructure planning and capital budgeting.** The first and essential step toward an asset-based, life-cycle approach is a reorientation toward long-range planning and capital budgeting at all levels of government. While some long-range planning exists, there is no comprehensive, statewide master plan; nor is there a planning process to develop such a plan. The result is a lack of coordination and a line item (or pork-barrel) approach to infrastructure and environmental planning issues by both state and local governments.

Important long-range planning and capital budgeting needs identified at the Economic Development Congresses are:

1. A master plan for capital improvements and new investments should be developed on a state-wide basis for a minimum 7-year cycle.
2. A financing plan must provide for adequate funding mechanisms at the county and regional level.
3. The master plan must give high priority both to transportation and environmental infrastructure.
4. All units of government should be required to have a capital budget and a capital budgeting process.
5. The plan and planning process should be the work of a non-political entity that has the credibility to act as a coordinator between state, local, and private interests. Everyone must be able to trust an entity that deals with "big bucks" and long time-span projects.
6. The plan should incorporate broad land-use goals and strategies.
7. The state should assist and encourage local areas with community improvement planning and programming.
8. All long-range infrastructure planning must tie infrastructure expenditures to realistic economic development objectives and plans.
9. Future plans must recognize the emerging role of counties, multi-county alliances, and regional planning organizations in addressing area-wide infrastructure problems such as solid waste systems and corridor development.

**Priority 2 - Develop and implement a statewide plan for environmental infrastructure.** Many Indiana communities face chronic environmental problems. Although a variety of factors contribute to this situation, the most widespread problem for communities is that they do not have the fiscal resources or technical expertise to deal with the growing complexity of today's environmental issues. Participants at Economic Development Congresses throughout the state identified the following areas of environmental infrastructure as critical priorities:

*Sewer systems.* While solid and hazardous waste and ground water are the hot environmental issues, Indiana must not lose sight of the fact that, according to the 1986 E.P.A. needs study, $1.6 billion in current wastewater construction needs remain. Indiana's urgent sewer problems pertain to capacity, lack of capital budgeting and planning, poor maintenance leading to the deterioration of capital stock, and combined sewer overflows.

*Cost-effective waste disposal has become the most important county infrastructure problem (along with the deterioration of county bridges). A mechanism for state government involvement in voluntary clean-ups is required.*

*Solid waste.* With a state average of only 8.5 years of landfill capacity remaining, planning for adequate, cost-effective waste disposal has become the most important county infrastructure problem

(along with the deterioration of county bridges). A mechanism for state government involvement in voluntary clean-ups is required.

*Ground water.* Since Indiana is so heavily dependent on wells for drinking water, ground water quality concerns are mounting rapidly. The key issues to be addressed are: acceptable ground water quality; nonpoint source pollution; and whether or not to declare certain areas off-limits to drinking (i.e. gray water use only).

A statewide plan must address head-on the economic impact of environmental management and the linkages between environmental quality and economic well-being. The plan must also include practical financing mechanisms that provide funds commensurate with needs. The advantages of revolving loan funds along with an environmental infrastructure bank must be thoroughly explored, and start-up of the wastewater revolving loan should not be delayed any longer.

**Priority 3 - Develop and implement a statewide strategic transportation plan with special attention to the transportation needs of smaller communities.** For Indiana to be an advanced manufacturing state, its firms must not only compete on cost, quality and reliability, but also on delivery. The ability to move goods on time is critical. Utmost care must be directed toward strategically locating future investments in highways, waterways, rail, and air. Indiana needs a plan of strategic corridors that capitalizes on its existing interstate system, explores prospects for rail upgrade and high-speed rail from the northwest quadrant to the southeast quadrant, evaluates the benefits and costs for an international passenger and cargo hub in Lake County, and considers the future role of the Ohio River for modern waterway traffic.

In developing such a plan, consideration should be given to the prospects for firm and employment growth in the warehousing and related distribution industry. Furthermore, the special needs of smaller communities must be more fully explored. With decentralization of manufacturing, Indiana's small to mid-sized communities have opportunities for growth if the infrastructure is in place. Economic Development Congress participants felt that many small communities lacked the necessary highway, rail, and air connections. This speaks not only to the need for full consideration in state transportation and economic development planning, but also to the need for improved communication and cooperation between local, regional and state entities.

Finally, any successful transportation plan must include a major overhaul of the streets and road distribution formula.

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*A finance gap of approximately $28.2 billion exists between now and the end of the century. Compared with states burdened by heavy indebtedness or high taxes, Indiana has greater capacity to meet this crisis. Its challenge is simply one of will.*

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**Priority 4 - Diversify financing options.** A finance gap of approximately $28.2 billion exists between now and the end of the century. Compared with states burdened by heavy indebtedness or high taxes, Indiana has greater capacity to meet this crisis. Its challenge is simply one of will. One way to get the most for the money is to diversify financing options. Indiana needs flexible financing for infrastructure as much as it does for small business development. Of the traditional sources of infrastructure financing--current revenue, debt, and user charges --Indiana has tended to rely more on current revenue than many other states and less on debt than most. In fact, outstanding state and local debt per capita is about half in Indiana of the average of the midwest states. A greater reliance on user charges and improved debt issuance and debt management procedures will be necessary. Indiana's local governments also should be given the flexibility to lease facilities from private owners and builders and purchase management services from private operators. State and federal financing for local public facilities, such as wastewater treatment plants, should be shifted from a grant to a loan basis.

Along with diversity and flexibility comes the need to keep local governments informed of their options, and to lay out these options in a clear, concise manner. Simplified state procedures for procurement and budgeting are required. Moreover, training and continuing education for local officials is a must.

**Priority 5 - Improve the day-to-day management of public assets.** Public facility management in Indiana is sometimes characterized more by patronage than professionalism. The problems of low salaries, inadequate training, and limited career opportunities need to dealt with. Improved capital budget procedures, life-cycle costing and streamlined intergovernmental cooperation can be expected to improve public sector asset management. Giving local governments the authority to purchase infrastructure services from private providers also will allow improved management practices, particularly for small communities.

Greater efficiency in public facilities can be obtained through more flexible bidding and procurement procedures. The application of higher levels of technology in the design, construction, and management of such public facilities as bridges, roads, and waste treatment and storage facilities can increase infrastructure productivity.

**Priority 6 - Increase public awareness of needs and public/private participation in public infrastructure.** While the infrastructure crisis in Indiana is real, there is little perception of this crisis by the general public, business, or industry. Information is required on needs, costs, and economic development consequences.

Suggestions made by participants at the statewide Congress include:

1. Increase the number of opportunities for involvement by community leaders.
2. Present information to the public in a practical and understandable manner.
3. Develop a state and regional marketing program to promote public awareness of environmental and infrastructure issues.

Public awareness should lead to greater public/private participation. Stronger, more resolute local partnerships among government, business, labor, and the construction industry will be required if we are to "build Indiana" under conditions of diminishing federal aid. Suggestions from participants at the statewide Congress include:

1. Establish local non-political infrastructure and environmental study groups, using state assistance and guidelines and involving local public officials, community leaders, businesses, and interest groups to resolve local issues and problems.
2. Establish a framework for further discussion of privatization of public facilities.

**Priority 7 - Increase attention to physical and cultural amenities.** Indiana's many communities should be encouraged to give greater attention to amenities planning and development. Increasing recreational facilities, improving community appearance, and developing diverse cultural assets can produce significant rewards in attracting highly-skilled, high wage earners.

*Increasing recreational facilities, improving community appearance, and developing diverse cultural assets can produce significant rewards in attracting highly-skilled, high wage earners.*

**Recent Accomplishments**

The 1988 General Assembly passed legislation for a new program of bond financing for highway improvements in Indiana. This new program should gradually eliminate the current backlog of rehabilitation and highway improvement projects. The Indiana Bond Bank has been successful in assisting smaller units of government with access to capital markets. Indiana Infrastructure, Inc.($I^3$), a not-for-profit public/private partnership, has provided well-researched recommendations which continue to be the foundation for infrastructure finance reform. $I^3$ is also a state model for localities to bring all the players of the equation together to "build Indiana." The repair and rehabilitation formula now built into the state budget process for post-secondary institutions has been successful in ensuring a planned approach for upkeep and modernization. The approach should be adapted to all areas of the state's budget. Tax increment financing innovation has been applied in recent years to finance up-front public costs for major public/private development projects.

Hoosiers must be realistic about the prospects for financing Indiana's infrastructure. The federal government will not be the major player it has been in the last two decades because of changing federal priorities (such as deficit reduction). If Indiana wants to be a leading goods-producing state (in agriculture, manufacturing, mining, and construction), it will need first-class transportation. If the state's residents want a high quality of life, they will need first-class environmental infrastructure--sewer-treatment, waste-disposal, and water-purification facilities. The relationships between infrastructure and economic and social development are becoming abundantly clear. The 1990s will see infrastructure as a pressing state and local issue. Must we wait for a major bridge collapse or a sewer blowout before we act? Must we curtail development and investment because of the lack of adequate public facilities? We have not been good at infrastructure planning in the past; we can no longer afford this permissive, piecemeal approach.

1. This article is extracted and adapted from *Looking Forward*, an update of Indiana's Strategic Plan for Economic Development. Copies of *Looking Forward* may be obtained from the Indiana Economic Development Council.

# Why There Will Be No Recession

**Richard B. Finch**

*Executive Vice President, Indiana Lumber and Builders Supply Association*

Since it occurred, the recession of the early 1980s has been a saving grace for the news media, financial reporters, and economists. When nothing else of any interest is happening, someone can always be found to discuss his or her projections of the date and severity of our next recession. The only interesting thing about these reports is that none of them are the same, except that they all keep us nervous about when the trouble will begin. It brings up the memory of Chicken Little: "The sky is falling!"

I am pleased to report that our recession anxieties can be relieved forever. Into my possession has come a listing of the materials that go into producing one ton of paper. If the listing, shown in the **Table**, hasn't made it clear, let me explain why I feel it is impossible for us to ever have a recession again.

Based on a conservative estimate, the federal, state, and local governments use several million tons of paper every day. The Armed Forces fill out all their paperwork in triplicate, so they probably use as much paper as the government offices--another several million tons daily. All businesses have been forced to become gargantuan paper-eating organizations. Then there are the millions of tons of paper used by ordinary people in their homes, 365 days a year.

It all adds up to billions of tons of paper production annually, with each single ton requiring all of the wood, minerals, chemicals, and fuel listed in the Table and the machinery, manufacturing, mining, logging, transportation, and labor to produce it. Everything that goes into one year of paper production requires enough money and produces enough taxable income to make our national debt look like a drop in the bucket.

It leads me to the inevitable conclusion that we must stop worrying about the doom-and-gloom predictions of a recession around the corner. Anyone with any knowledge of the production and use of paper can see that that process alone will keep a recession from occurring. The media and the economic forecasters merely need something to talk and write about when things get dull.

**Table**
**What Goes Into a Ton of Paper**

| | |
|---|---|
| Water | 27,000 gal |
| Wood | 4 tons |
| Sulfur | 12 lb |
| Magnesium Hydroxide | 10 lb |
| Lime | 120 lb |
| Salt Cake | 28 lb |
| Caustic | 87 lb |
| Chlorine | 70 lb |
| Starch | 112 lb |
| Power | 1,000 kwh |
| Fuel | 2/3 ton coal |
| Talc | 12 lb |
| Synthetic Fibers | 16 lb |
| Alum | 28 lb |
| Clay | 187 lb |
| Calcium Carbonate | 45 lb |
| Coating | 12 lb |
| Chlorate | 27 lb |
| Sulphuric Acid | 43 lb |
| Sodium Hydrosulfide | 8 lb |
| Dyes and Pigments | 10 lb |
| Capital Investment | $850 per ton |
| Work Hours | 7 per ton |

## In the Next Indiana Business Review

*1989 Economic Outlook--National, State, and Local*

**Indiana Business Review**

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# Indiana Business Review

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# The Outlook for 1989


## Indiana Business Review

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**Bruce L. Jaffee**

*Chairperson and Professor of Business Economics and Public Policy, Indiana University School of Business*


We expect positive but sluggish growth in real GNP in 1989. Thus the current economic expansion, which began in November 1982 and is already the longest peacetime growth period in the nation's history, will extend its record. Real GNP looks to increase between 2.3% and 2.8% in 1989, compared to an expected 4.0% growth rate for 1988. **Figure 1** shows actual and expected annual rates of change of real GNP in this decade.

With continued positive growth in the economy, we think further increases in employment are possible. The unemployment rate should fluctuate in the 4.9% to 5.4% range for most of the year. We see no signs that a recession is on the horizon unless there is some unexpected shock to the economy, such as sharp increases in oil prices, a crash in financial markets, or very tight monetary policy. Growth in 1988 has been better than we anticipated last year; the unexpectedly strong sectors were exports and business investment. In the last few quarters, the expansion has been led by exports. This has caused a strain on capacity in many export-oriented sectors of the economy and has fueled a boom in plant and equipment spending. We see neither sector having as strong a growth rate in 1989 as either one had in 1988.

Fiscal policy is likely to remain restrictive in 1989. We think it is unlikely that there will be a tax increase in 1989, and real government spending at the federal level is expected to decline. There will be continued concern about the federal budget deficit, and the soon-to-be-released report by the National Economic Commission may provide some politically palatable guidelines on how to reduce the

**Figure 1**
**Change in Real GNP, Expected and Actual**

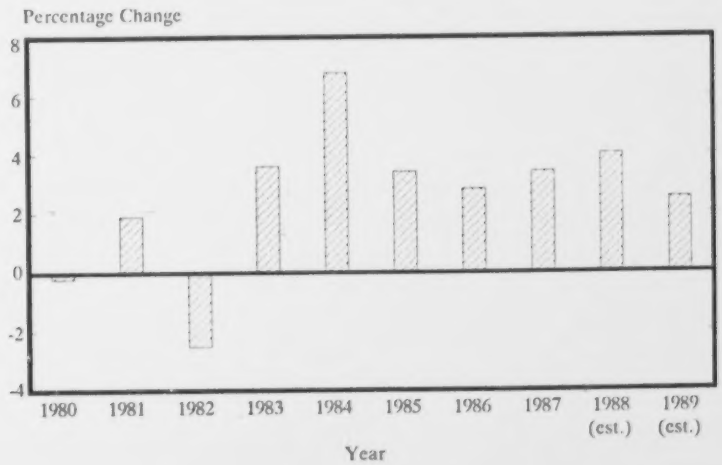
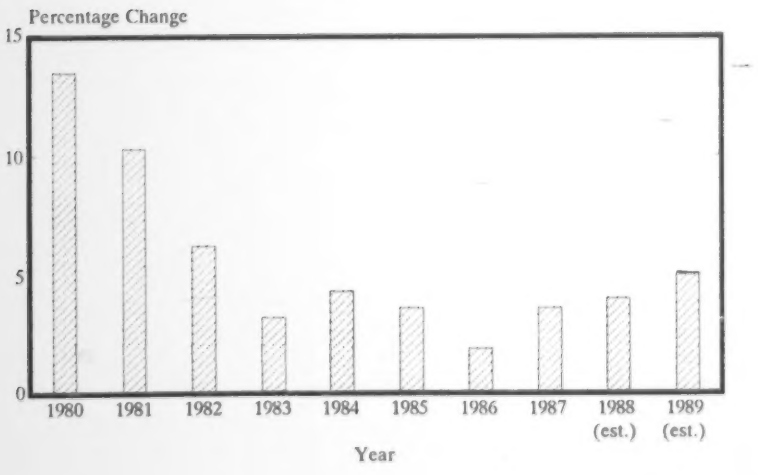


**Table 1**
**GNP and its Components**

| | *1987* | *Percent Change from Previous Year*[1] | |
|---|---|---|---|
| | *($ bil. 1982)* | *1988 (est.)* | *1989 (predicted)* |
| GNP | 3847 | 4.0 | 2.5 |
| Personal Consumption Expenditures | 2521 | 2.9 | 1.5 |
| Gross Private Domestic Investment | 674 | 6.9 | 4.1 |
| Nonresidential Fixed | 445 | 10.2 | 7.0 |
| Residential Fixed | 195 | -2.4 | 0.2 |
| Change in Business Inventories | 34 | 40.0 | 35.0 |
| Net Exports | -129 | -97.0 | -78.5 |
| Exports | 428 | 17.3 | 9.0 |
| Imports | 557 | 7.5 | 4.5 |
| Federal Government Spending | 339 | -3.0 | -0.5 |
| State and Local Spending | 441 | 2.8 | 3.1 |

*1. Except for Change in Business Inventories and Net Exports, both of which are in billions of 1982 dollars.*

**Figure 2**
**Change in Consumer Price Index**




deficit while meeting the spending priorities of the new administration. Nonetheless, the deficit should remain flat, about $150 billion. The growth rate in the money supply is likely to remain slow, on the low end of the Federal Reserve targets. As a result, we expect interest rates to remain at approximately their current (late December) levels.

Inflation is likely to pick up slightly in 1989 but not be a serious problem for the economy. The Consumer Price Index will rise at about a 5% rate in 1989, and the broader GNP deflator should rise in the 4% to 4.5% range. The upward pressure on prices will come from rising import prices (partially caused by dollar depreciation), continued tightening of labor markets, high capacity-utilization rates, stable or rising commodity prices, and tighter monetary policy. **Figure 2** shows the significant declines in the inflation rate from 1980 to 1986 and modestly increasing rates thereafter through 1989.

There is some evidence that growth in the rest of the world's economies is slowing down. One of the implications of this observation is that these economies are likely to increase their purchase of U.S. exports less than in the past year, so our trade balance is unlikely to show any significant real improvement between 1988 and 1989. Further declines in the value of the dollar are likely, as markets adjust toward making the U.S. economy more competitive.

Consumption spending, the largest component of GNP, is likely to grow at a slightly slower pace than overall GNP. The savings rate has increased slightly in 1988 compared to the 1987 level, but it remains quite low by historical standards.

Some of the policy issues that must be watched carefully include:

* Discussions relating to protectionism and the implementation of the U.S.-Canadian Trade Pact;

* Efforts to reduce the federal budget deficit; and

* The inevitable bailout of the FSLIC and the farm credit system and subsidies to banks and savings and loans.

**Table 1** lists real GNP and its components for 1987 and expected rates of increase for 1988 and 1989.

## Personal Consumption

**J. Fred Bateman**

*Professor of Business Economics and Public Policy, Indiana University School of Business*

Personal consumption spending is significant in our forecast for three main reasons. First, consumption spending constitutes the largest component (about two-thirds) of GNP. Any major change in its magnitude will thus substantially influence the national economic output. Second, during the early phase of the current expansion, consumer spending was the sector that did the most to propel the economy forward. It lost that position later, but the question remains whether it can at least continue to play a strong supporting role as the expansion ages. Third, many experts forecast that the October 1987 stock market crash would lead to a downturn in the real economy as individuals' wealth levels dropped and expectations dimmed. We did not forecast such a turn of events then, but some still wonder if some effect may yet be felt.

We do not foresee any negative move in consumption spending during 1989. Overall, we forecast approximately a 1.5% growth in aggregate consumption. Although both consumer spending and confidence flagged somewhat during the third quarter of 1988, we still believe that both will remain reasonably strong over the next year. In fact, consumer spending picked up somewhat during the final quarter of 1988, and it should remain around our forecast level.

Within aggregate consumption, spending can vary widely among product groups. Spending on services has been strong for the past several years; we anticipate its remaining so for 1989. The sustained demand for services results from the tendency of consumers in higher income countries to demand a greater number of services and also from such social changes as the increased participation of women in the labor force. As women move into non-household occupations, the demand for such services as restaurants, day-care centers, and personal investment services increases. On the other hand, for 1989 we foresee spending on consumer nondurable goods as weak and spending on durables as steady or somewhat weakened relative to 1988.

*What vitality the sector possesses will emanate from the service sector. We do not see its returning to the leading role it played in the early years of this record economic expansion.*

Overall, total consumption expenditures are forecast to grow less than this year's level. What vitality the sector possesses will emanate from the service sector. We do not, of course, see its returning to the leading role it played in the early years of this record economic expansion.

Our forecast also includes an outlook for three activities that bear on next year's consumption expenditure: automobiles, energy, and agriculture.

### Automobiles

For 1988, auto sales will total about 10.5 million units. Domestic brand sales have been relatively stable, import sales have been down, but purchases of foreign makes assembled in the U.S. have risen sharply. Purchases of light trucks have also risen this year. For 1989, we anticipate a further decline in import buying and a slight gain for American brands. Sales of domestically-assembled foreign brands are expected to continue strong. Overall, we foresee stability, or perhaps a modest gain, in aggregate automobile sales in 1989.

### Energy

Energy demand growth, particularly for fossil fuels, is slackening in most major industrial economies. This results partly from heightened efficiency in industry, a movement toward nuclear power in some countries, and the relative shift of manufacturing production away from traditional producing nations. On the other side of the market, oil supplies remain plentiful. Recent OPEC decisions are not expected to affect petroleum prices dramatically in 1989. Thus, both demand and supply conditions favor stable or only slightly higher energy prices. Some unforeseeable world crisis could obviously alter this situation.

### Agriculture

The primary concern regarding agriculture has been the potential effect of the drought on output and prices. We believe that most of this effect has already been

felt in food prices at the retail level. For 1989 we anticipate only modest (if any) additional increases in agricultural prices. The only major exception could be meat products, the prices of which could increase as a consequence of the accelerated slaughter of animals this past summer. Fruit and vegetable production was not substantially influenced by the dry weather. The prices for other basic crops already reflect the drought's effects. Thus, food prices should not rise sharply during the year unless nature repeats its dry weather pattern this summer.

In summary, we foresee consumption spending in 1989 to be largely a continuation of the pattern set during the preceding year but growing overall by a modestly slower rate. We also expect the national savings rate to remain at its currently low level. Any expansion in consumption expenditures will thus generally parallel the growth in disposable income.

## Nonresidential Investment

**Lawrence S. Davidson**

*Associate Professor of Business Economics and Public Policy, Indiana University School of Business*

Nonresidential investment includes business fixed investment (BFI, which includes business spending on structures and equipment) and inventory investment. Last year we predicted that BFI would rebound from its lackluster pace in 1986 and 1987 and grow more quickly in 1988. This prediction was accurate.

Although real BFI has increased by about 5% per year since the economic recovery began in 1982, it has grown in fits and starts. For example, problems in the oil industry and changes in tax laws kept growth over the last three years to about a 2.2% annual rate. This snail's pace was mostly the result of a contraction in spending on structures (since 1985, structures spending has fallen at a rate of about 5% per year). Sales of producers' durable equipment, on the other hand, have been consistently strong since 1982. Although the growth rate of total equipment sales did dip a little over the last three years, demand for information processing and related equipment (computers and telecommunications gear) has more than offset sluggish growth in industrial and transportation equipment. This kept total BFI growing by more than 8% per year since the recovery began. The strong relative growth of equipment is reflected in the portion of BFI commanded by equipment sales. The share of equipment has gone from 61% of BFI in 1982 to 74% in 1988. Nevertheless, in the last year spending on both structures and equipment picked up enough to cause BFI to grow by more than 10%.

Spring 1988 surveys conducted by the U.S. Department of Commerce indicated that manufacturing firms planned to raise plant and equipment spending by about 11.9% in 1988. Such plans can change quickly, and this bullish outlook is not presently being extrapolated to 1989 by many forecasters. In fact, preliminary third quarter estimates of actual BFI in 1988 reveal a slowdown in capital spending. With interest rates creeping up, export growth declining from its rapid pace in 1988, and overbuilding in office structures, there is some reason to forecast slower BFI growth in 1989; some forecasters project increases of only 2%-3% for next year. We are not that pessimistic. There are several factors that we believe will keep BFI strong in 1989, at a growth rate of about 7%.

First, much of the recent growth of BFI has come through equipment sales, the great majority of which were electronic goods that have ended up in service industries. Therefore, the investment that has been made has not greatly added to capacity in manufacturing. By one estimate, the factory sector's capital stock rose by only 1% in 1987, well below its long-term trend of around 4%. If manufacturing firms are going to expand capacity to facilitate continued growth of sales to both domestic and foreign buyers, then we can expect further growth in BFI.

*There is good reason to predict a snap-back in the manufacturing-structures component of BFI to augment continued strong growth in equipment sales to the service sector.*

Second, we expect that both foreign companies and U.S. multinationals will continue to relocate plants in the U.S. as long as the long-term expectation is for a gradually depreciating U.S. dollar. Third, as capacity-utilization rates in manufacturing creep toward the 85% level, there is growing pressure for capacity expansion. This is especially true for the textiles, paper, and chemicals industries. Thus there is good reason to predict a snap-back in the manufacturing-structures component of BFI to augment continued strong growth in equipment sales to the service sector. With 7% growth in 1989, BFI will command almost 12.5% of GNP; this would put it back near where it was in 1985.

Inventory investment occurs when

firms increase the amount of inventories on hand. Expressed in constant 1982 dollars, annual growth in inventories increased from $15.6 billion in 1986 to $34.4 billion in 1987. The annualized average rate so far in 1988 is a little over $55 billion, but most of the increase came in the first quarter. The increases were not concentrated at the retail level but mostly arose in durable goods industries at the wholesale level and to a lesser extent in durable goods manufacturing. It now appears that inventory-sales ratios, although not outside of historical norms, are reaching a point where further accumulation is unnecessary. Thus we cannot count on this sector to contribute to the growth of output as mightily as it did in 1987. An increase in inventories of about $35 billion in 1989 would keep inventory-sales ratios in their normal range.

## Fiscal Policy

**R. Jeffery Green**

*Professor of Economics and Co-Director, Center for Econometric Model Research, Indiana University*

At midnight September 30, 1988, fiscal year (FY) 1988 ended, and FY 1989 began. The old fiscal year ended with a federal deficit of $155 billion, up slightly from the FY 1987 total of $150 billion and the seventh straight year with a deficit of more than $100 billion. Wasn't the Gramm-Rudman-Hollings (GRH) legislation supposed to guarantee deficit reduction by forcing spending cuts if budget targets weren't achieved? Yes and no. The legislation certainly was designed with that goal in mind, but by its very nature it is impossible to enforce if the budget deficit is anywhere near target.

Consider FY 1988. A history of forecasts of the FY 1988 deficit is shown in **Table 1**. The original GRH target for the year was $108 billion. At the same time the so-called current services deficit, which assumes no changes in policy, was estimated at $150 billion. But because of proposed reductions, the projected deficit was only $94 billion. One year later, in January 1987, the current services deficit was still estimated at $150 billion; the projected deficit had risen to $108 billion, exactly equal to the GRH target.

The huge discrepancy between the current services deficit and the projected and GRH deficits meant something had to give. Unfortunately, it was the GRH target, which was revised upward to $148 billion (close to the other two deficit figures). The final deficit, as mentioned earlier, hit $155 billion, meaning that in two years neither the executive nor the legislative branch could reduce the deficit.

The current services budget only changes if policy changes or if the

**Table 1**
**FY 1988 Federal Deficit Projections Made at Various Times**
**(billions of dollars)**

| | *Jan. 1986* | *Jan. 1987* | *Jan. 1988* |
|---|---|---|---|
| Current Services | 150 | 150 | 148 |
| Proposed | 94 | 108 | 147 |
| Gramm-Rudman-Hollings | 108 | 108 | 144 |

*The actual deficit was $155 billion.*

*Source: OMB, Budget of the U.S. Government, FY87, FY88, FY89*

**Table 2**
**FY 1989 Federal Deficit Projections Made at Various Times**
**(billions of dollars)**

| | *Jan. 1986* | *Jan. 1987* | *Jan. 1988* |
|---|---|---|---|
| Current Services | 139 | 147 | 139 |
| Proposed | 68 | 93 | 147 |
| Gramm-Rudman-Hollings | 72 | 72 | 136 |

*The October 15, 1988 GRH baseline estimate was $145 billion.*

*Source: OMB, Budget of the U.S. Government, FY87, FY88, FY89*

**Table 3**
**Government Purchases of Goods and Services**
**(billions $1982)**

| | *1988:3* | *1988:4* | *1989:1* | *1989:2* | *1989:3* | *1989:4* |
|---|---|---|---|---|---|---|
| Federal | 325 | 324 | 323 | 322 | 321 | 318 |
| State/Local | 455 | 458 | 461 | 464 | 467 | 470 |

economic assumptions used to project revenues and expenditures turn out to be incorrect. The economic forecasts made in 1986 and 1987 turned out to be quite accurate, so the fact that the current services deficit did not stray far from $150 billion indicates that few policy changes were made.

Now consider FY 1989, which began in the fall. The history of deficit reduction for this fiscal year is given in **Table 2**. In January 1986 the GRH deficit target for FY 1989 was set at $72 billion. Two years later it had been raised to $136 billion. Thus, for the current year the deficit only has to fall by about $10 billion to get within $10 billion of the target and avoid automatic cuts. But these cuts have already been avoided, because that decision is based on a view of the budget at the beginning of the fiscal year. The estimate at that time was of a deficit of $145 billion, slightly less than $10 billion above target and above the current services estimate made in January 1986. So, once again, Congress and the Administration have been unable to reduce the deficit.

To avoid automatic cuts next fall, the projected deficit for FY 1990 will need to be less than $110 billion, $10 billion above the FY 1990 GRH target. The actual deficit as that fiscal year begins, however, is likely to be near $150 billion. Thus, the budget submitted for FY 1990 will need to include some $40 billion in tax increases or spending reductions. How can we get there?

One obvious way is to revise the GRH targets again. The problem is that all credibility may be destroyed by such action. Another way would be to implement the flexible freeze advocated by President-elect Bush. However, that would not produce a reduction in the FY 1990 budget anywhere near large enough to meet the GRH target. This means that the GRH target would need to be altered, again hurting credibility. It appears that only cuts linked to a tax increase would be sufficiently large to reach the targets this year. Given that neither Congress nor the president-elect favors tax increases, the GRH target probably will be raised. However, even a higher target probably can only be achieved if Congress also makes significant cuts in spending.

## The International Economy

**Michele Fratianni**

*Professor of Business Economics and Public Policy, Indiana University School of Business*

The United States is in its sixth year of economic expansion following the recession of 1980-82. The present business-cycle expansion has exceeded the average length of recoveries in the postwar period by three and one-half years. One reason for the sustained recovery is the U.S. export boom. The boom started in 1987 when exports, measured in 1982 dollars, rose 13% from the previous year. In the first quarter of 1988, exports went up by an annual rate of 13.6%; in the second quarter the rate was 16.2%. In contrast, imports (again measured in 1982 dollars) increased by 7.9% in 1987, 6.9% in first quarter 1988, and 5.9% in second quarter 1988. In sum, the volume of U.S. exports and imports has responded to the dollar depreciation in the direction predicted by theory.

The story is somewhat different for current-dollar data. In 1987 the trade deficit was $160 billion and the current-account deficit--a measure that includes services and unilateral transfers--was $154 billion. In sum, the progress toward a balanced current account has been much lower than anticipated.

### Reasons for the Slow Adjustment

There are three principal reasons for this phenomenon. The first is that the lags with which trade flows respond to exchange-rate changes are becoming longer. Previously we believed that it would take, on average, 12 months for exchange-rate changes to affect trade. The recent experience suggests a lag twice as long. The longer lags are accounted for by the role of the dollar as a key international currency and by large profits earned by foreign producers on their exports to the U.S. The International Monetary Fund reports that approximately 70% of U.S. imports are invoiced in dollars. Clearly, the extent of this practice impedes the effects changes in exchange rates have on the trade balance. As well, the existence of large

profits is another consideration in preventing foreign producers from raising the dollar prices of their exports.

The second reason is structural. The U.S. has a low share of manufactured products in exports, both in relation to the composition of its own imports and the composition of exports of countries such as Japan. Consequently the response of U.S. export volume to income and price changes is smaller than the response of U.S. imports. For example, a 1% increase in real GNP in the U.S. and abroad would generate a U.S. trade deficit if other factors did not intervene.

*The response of U.S. export volume to income and price changes is smaller than the response of U.S. imports. A 1% increase in real GNP in the U.S. and abroad would generate a U.S. trade deficit if other factors did not intervene.*

The third reason is linked with economic policies. The U.S. has pursued economic policies (budget policies) that have made this country spend in excess of what it produces. In contrast, West Germany and Japan, the two largest current-account surplus countries, have pursued policies that have restrained spending relative to home production. The U.S., in addition, has enjoyed higher real rates of interest than the rest of the world. This has resulted in large net capital inflows and consequently in large current-account deficits. (Note that the sum of the current-account balance and the capital-account balance is zero under flexible exchange rates.)

**Projections**

The existing pattern of current-account deficits and surpluses in the world cannot persist. The U.S. has become a debtor country. Although the actual size of this indebtedness is unknown with any degree of precision, it is clear that current and prospective current-account deficits will add significantly to net debt. The implied net interest payments will further deteriorate the current-account deficit. It follows that the U.S. trade turnaround will have to be much larger than if the U.S. had been a net foreign creditor.

The adjustment needs to be accomplished with a combination of spending policies and changes in the terms of trade. By spending policies we mean that the U.S. will have to restrain its spending relative to its ability to produce; in practice this will mean a reduction of the federal budget deficit. West Germany and Japan will need to proceed in the opposite direction. Such prescriptions are well known in Washington, Bonn, and Tokyo. Washington is exerting pressure on Bonn and Tokyo for those two governments to take a more expansive fiscal stance. Bonn and Tokyo are putting pressure on Washington for the U.S. government to restrain fiscal profligacy. This type of "international cooperation" has produced few results so far, however. On the margin, one can say that the U.S. is the country that has cooperated the least. Despite the record, we look for economic growth abroad to exceed that in the U.S., a factor that will contribute to a reduction of the U.S. external deficit.

In principle, there is a value of the exchange rate that, other things the same, will ensure equilibrium in the current account. The difficulty in computing such a value is that exchange-rate changes bring about changes in prices and incomes with the result that *ceteris* are no longer *paribus*. We believe, however, that the dollar remains under pressure and that an additional real depreciation is in the making. This depreciation will take place regardless of whether or not the monetary authorities of the seven Summit countries intervene in the foreign exchange market.

The summary of our forecast is as follows:

| | *1988* | *1989* |
|---|---|---|
| Exports ($1982, NIA, % change) | 20 | 9 |
| Imports ($1982, NIA, % change) | 6 | 4.5 |
| Trade Deficit ($billion) | -128 | -115 |
| Current Account ($billion) | -138 | -130 |
| Dollar/yen Depreciation (%) | | 10 |
| Dollar/German mark Depreciation (%) | | 8 |
| Effective Exchange Rate Depreciation (%) | | 5 |

## Interest Rates and Financial Markets

**Robert C. Klemkosky**

*Fred T. Green Professor of Finance, Indiana University School of Business*

Interest rates should remain relatively stable in 1989. If anything, they may even

nudge a little higher. For U.S. Government securities, the short-term rate should remain in the 7.5%-8.5% range, and long-term rates should be from 8.5%-9.5%, tending toward the higher end of the ranges.

There are several reasons for this forecast. First, real economic growth will decelerate in 1989 to 1.5%-2.5% from the 3.5% figure reached in 1988. This slower growth could still place slight upward pressure on interest rates, as they usually peak with the economy. Second, inflation should increase slightly in 1989; this increase will be embodied in interest rates. The sources of the upward pressure on prices will be wages (because of lower unemployment rates) and capacity constraints at some of the basic industries and wages.

An important determinant of interest rates in 1989 will be the value of the dollar relative to other foreign currencies. If the dollar should weaken significantly, it may be necessary to raise interest rates to protect its value. Under this scenario, the economy would probably not grow at the forecasted rate. Likewise, a stronger dollar would result in higher inflation abroad and corresponding higher interest rates. Slow growth or no growth abroad would result in lower exports by the U.S. and slower economic growth in 1989. Since exports were responsible for 40%-50% of U.S. economic growth in 1988, economic growth may not materialize with lower exports, and interest rates may fall below the lower range of the above forecasts. This dilemma of the dollar obviously will require careful coordination among the G-7 countries in 1989.

A final factor that dictates stable interest rates in 1989 is the relatively flat yield curve that prevails at this time (December 1988). The yield curve has gotten progressively flatter in 1988, as short-term interest rates have increased much more than long-term rates. This indicates that expected interest rates will be only slightly higher in 1989.

Even slightly higher interest rates do not bode well for the stock market this year. Price-earnings ratios are not at historical highs, but neither are they at historical lows. Stocks appear to be adequately valued given the forecast of slightly higher interest rates and slower economic growth in 1989. The growth rate of corporate earnings is also expected to decline substantially. For the S&P 500, 1988 earnings per share increased 15% over 1987. In 1989, they are expected to increase by only 6%-7%. Stock prices historically have not done well after the rate of earnings growth has peaked.

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*It is important to common-stock values that economic growth in 1989 be in the 1%-3% range. Anything outside that will not be viewed favorably by the stock market.*

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The stock market faces an economic dilemma similar to the dollar dilemma facing interest rates. If the economy should grow too rapidly, inflationary pressures and expectations would build. The resulting higher interest rates would be a drag on stock values and increase the possibility of a recession via a tight money policy by the Federal Reserve. A weaker economy would translate into lower or perhaps negative earnings growth, and this scenario would also be bearish for the stock market. It is important to common-stock values that economic growth in 1989 be in the 1%-3% range. Anything outside that will not be viewed favorably by the stock market. As mentioned earlier, the strength or weakness of the dollar will be a major determinant of economic performance in 1989.

The stock market is still concerned with the monthly trade figures. At current exchange rates, the U.S. will probably not see much improvement in the trade deficit in dollar terms. Exports have already reacted to the lower dollar by increasing 20% in 1988 over 1987. At the current rate, it is expected that exports will increase by 5%-8% in 1989. Although some progress has been made against imports in real terms, imports probably will not decline from present values in dollar terms. A major concern is that the trade balance will deteriorate in 1989. Such an event would obviously weaken the dollar and mandate higher interest rates.

Another factor that may affect the stock market in 1989 is the corporate restructuring that has prevailed over the last five years. During that period $550 billion of common stock has been retired because of mergers, leveraged buyouts, repurchase plans, and other corporate restructuring. Even considering the issuance of new shares, the loss has been $400 billion. Many of the restructurings have been financed with high-yield, or junk, bonds. Anything that interferes with the issuance of junk bonds will lessen the corporate demand for common stock. Alan Greenspan, chairman of the Federal Reserve Board of Governors, has already advised commercial banks to be judicious in lending for corporate restructuring deals. Although much of the market's performance in 1988 can be attributed to the corporate demand for shares, regulatory action or major defaults may eliminate this demand for common stock.

A related concern is the highly leveraged balance sheets of publicly traded corporations in the U.S. At the end of 1988, it is expected that the debt/equity ratio will approximate 1.0, compared to 0.6 in 1980. Likewise, 25% of earnings before interest and taxes will be needed to service debt, versus 17% in 1980. Corporate earnings are thus subject to more risk than ever before.

*A dramatic fall for the stock markets in London or Tokyo will have repercussions here, just as the U.S. crash of October 1987 was a worldwide event.*

Another worry for the stock market in 1989 will be what happens abroad. The world's major markets have become globalized in the 1980s, and the U.S. markets cannot be isolated from stock market events in Tokyo or London. A dramatic fall for the stock markets in London or Tokyo will have repercussions here, just as the U.S. crash of October 1987 was a worldwide event.

The market's performance in 1988 has been a pleasant surprise, given the events of the previous October. However, much of the performance can be attributed to lower oil prices, a stronger dollar, record earnings growth, and corporate restructuring. Unfortunately, all of these factors may not recur in 1989, and thus the forecast is for a flat-to-down market. This is not to say that a dramatic decline is predicted; but common stock values look unrewarding relative to the returns available on money market instruments and bonds. As a result, the recommended asset allocation is basically unchanged from last year: 30% money market instruments, 30% bonds (five-year maturities or less), and 40% equities.

## Inflation, Unemployment, and Capacity Utilization

**Lawrence S. Davidson and Bruce Jaffee**

*Associate Professor, and Chairman and Professor, Business Economics and Public Policy, Indiana University School of Business*

Since 1980, when inflation exceeded 10%, both the broad GNP deflator measure of inflation and the narrower, but better known, Consumer Price Index (CPI) have shown a nearly continuous decline, with inflation rates staying below 5% after 1982. Although we have experienced quarters when the inflation rate was nearly 0%, since 1985 general inflation has averaged about 3% per year with consumer goods inflation a little higher, between 3.5%-4% per year.

Consumer goods prices have been climbing at nearly a 5% rate since the middle of 1986. As a result, there is understandable concern that inflation is racheting upward and may threaten economic prosperity in 1989 and beyond. There are several reasons why this concern may be exaggerated. Neither demand conditions, cost factors, nor special events presage much higher inflation than we have experienced in the last three years. We see inflation rising in the 4.5%-5.5% range in 1989.

### Demand Factors

Whenever the demand for goods and services grows faster than the capacity of firms to increase output, there is a tendency for the unemployment rate to fall and for the inflation rate to rise. We are forecasting that aggregate demand will grow in 1989, but not as quickly as it did in 1988. There is less stimulus coming from government spending, and we believe that we can count on the Federal Reserve to continue leaning against inflation. Any stimulus in demand from the foreign sector should also be less in 1989 than it was in 1988. Therefore, although we are forecasting a fall in the unemployment rate for 1989, the fall will be moderate and compatible with other special factors in labor markets that should not bring higher inflation.

The capacity of the economy is most commonly measured by the capacity utilization rate or the employment rate (or its more common inverse, the unemployment rate). Both measures have improved substantially during the decade, but we believe further improvement is likely in 1989 without significantly fueling the inflationary fires. The capacity utilization rates for manufacturing and total industry have fluctuated in the 81%-84% range in the last 12 months; the manufacturing capacity utilization rate has exceeded the overall rate by about 0.3% for most of the period. We see this trend continuing into 1989. Although the overall rate is unlikely to exceed 84%, some sectors--especially business equipment, and electric utilities if we have another hot summer--may be faced with capacity constraints.

The unemployment situation is similar. The rate for all civilian workers peaked at 9.7% in 1982 but declined to about 5.6% in 1988. We anticipate a 5.4% rate for 1989. However, there will still be considerable overall employment slack in the economy. The unemployment rate for women who maintain families was more than 8% in 1988, and the rate for minori-

ties exceeded 10%. There is still a considerable amount of involuntary part-time employment.

**Cost Factors**

Wholesale costs started to increase in early 1987 after falling during many of the previous 24 months. Nevertheless, the three-year moving average of percentage changes in wholesale prices is at the 1% level. In addition, the general tendency (as measured by the three-year moving average of annual percentage changes) of unit labor costs, which reflect how much extra labor costs are embodied in each additional unit of output, also has barely risen above its value in 1985. This moving average has risen from a yearly level of 2.2% in 1985 to about 2.8% in 1988. Although compensation may increase in 1989, it is likely that slower employment growth will keep labor productivity from falling and unit labor costs from rising significantly from 1988 levels.

*Judging from the behavior of inflation rates in 1988, much of the increased food prices will have worked their way through the system before the end of the year.*

Special mention should be made of food and energy prices in 1989, as a result of the drought of 1988 and the decrease in hostilities in the Iran-Iraq war. Food and energy prices are important components of the CPI and are volatile. Because of these facts, they can produce sharp swings in the inflation rate. Those effects, however, are usually of short duration. Judging from the behavior of inflation rates in 1988, much of the increased food prices will have worked their way through the system before the end of the year. Furthermore, the farm value of food and feed commodities, where the drought had its major impact, is a relatively minor share of retail food costs. Farm value is only 31% of grocery store purchases and only 26% of all consumer food expenditures. Nevertheless, with food prices rising a little faster on average than in 1985-87, we predict moderate sustained increases in 1989.

Energy is a different matter. In 1986, when energy prices took a nosedive, the fall was reflected in the overall inflation rates through much of 1986 and 1987. Although the glut in oil markets has not been as pronounced this year, if a barrel of oil hovers around the $15 mark for a while longer, we can expect downward pressure on inflation from the energy sector reaching into 1989. Combining food and energy, then, there is no implication for higher inflation. The prices of industrial commodities other than oil, such as chemicals and metals, moved sharply upward in 1988; we expect this trend to continue in 1989.

**Other Factors**

One final important determinant of inflation is the behavior of the value of the dollar. Although it has oscillated, the overall value of the dollar has depreciated persistently since February 1985. The depreciation makes imports more expensive and has a tendency to drive up prices of domestically produced goods and services as domestic producers find foreign competitors at a price disadvantage. As a result, continued growth in import demand, coupled with further declines in the value of the dollar, are likely to lead to significant price increases for imported products. This is the one major negative on the inflation front.

## Housing

**Jeffrey D. Fisher**

*Associate Professor of Finance and Real Estate and Director, Center for Real Estate Studies, Indiana University School of Business*

The movement in mortgage interest rates should parallel that of interest rates in general. Rates for both fixed-rate and adjustable-rate mortgages are expected to either remain at their current level or rise slightly during 1989.

At the time of this forecast, housing starts are running at a seasonally adjusted annual rate of about 1.45 million units. The trend during 1988 has been slightly downward, and this is likely to continue as mortgage rates nudge upward. The estimated number of starts for 1989 is 1.4 million units. Housing in the Midwest has been stronger than for most of the nation, reflecting recent recovery in the Rust Belt. This strength is likely to continue during 1989.

Nationally, the price of new homes has been falling on average recently due to weakness in the Northeast and West, where prices had increased significantly in recent years. In the Midwest, where home prices have only recently begun to rise, further increases are likely. New home prices in the Midwest are expected to keep pace with inflation, increasing about 5% during 1989.

Housing affordability has been dropping slightly nationally, as home prices and interest rates have risen. However, affordability in Indiana and the Midwest remains very high relative to the rest of the nation because of a much lower median price. The median price of an existing home in Indiana is about $57,000 versus $91,000 for the nation.

The sharp decline in multifamily con-

struction caused by the 1986 Tax Reform Act is now creating a shortage of rental property in some areas of the country. This is putting upward pressure on rental rates for apartments. Rental rates will most likely rise with inflation during 1989.

## The Indiana Forecast

**Morton J. Marcus**

*Director, Indiana Business Research Center, School of Business, Indiana University*

The Indiana economy has been one of the beneficiaries of the decline in the value of the dollar. Hoosier industries have been able to recapture some foreign customers and, most particularly, reestablish market positions within domestic markets. The most notable success stories have been in the steel industry and other sectors contributing to producer and consumer durable goods. Current estimates indicate that manufacturing employment has grown within Indiana during 1988 by 17,500 jobs, an increase of nearly 3% over 1987.

Total employment growth during 1988 has been nearly 100,000 jobs, a 4% increase. The monetary value of these gains have equaled more than $1.2 billion in real wages and salaries for Hoosier workers.

The anticipated decline in the rate of growth for the national economy will be matched by a decline in the growth of Indiana's economy in 1989. Employment growth is expected to be only 60,000 jobs in the year ahead, with real wages and salaries advancing by $700 million--less than 2%. As manufacturing gains are reduced (10,000 added jobs are expected in the state's factories during 1989), the potential for growth in other sectors is similarly limited. Although service activities can be important contributors to the export base of a state, Indiana has not developed its services in this manner. The state still relies on manufacturing, agriculture, and mining for its export strength.

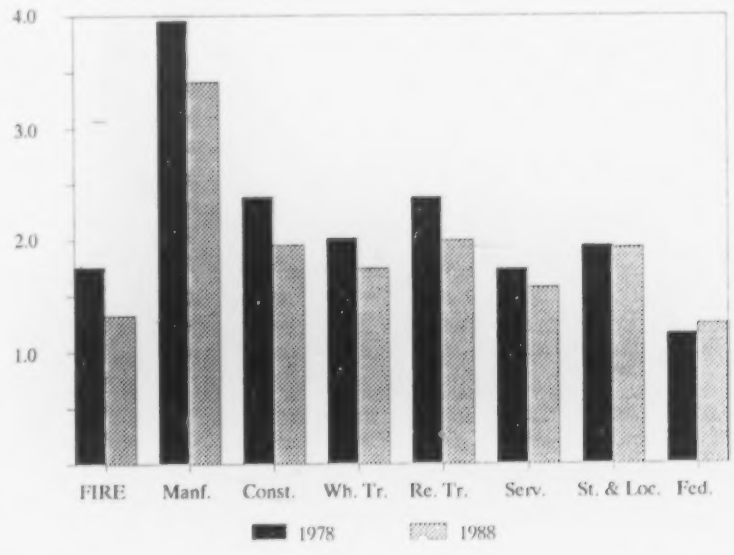
Next year may show stronger personal income growth than we currently expect for 1988. Because of the drought, Indiana farm proprietors' earnings are estimated to be a negative $1 million, compared with a positive $809 million in 1987. (Farm proprietors' earnings in 1987 equaled 1.1% of total personal income.) This cut the rate of growth for Indiana's personal income (after adjustment for inflation) to 2.1% for the year 1988. If farm proprietors' income is excluded, the state's personal income grew by 3.5% in 1988.

For 1989, we anticipate that farm proprietors will again have positive income (over $900 million). The result will be an "increase" in the rate of growth of personal income from 2.1% to 2.2%. If these drought-influenced figures are left out, the rate of growth for Indiana's personal income will decline from 3.5% to 1.1%. Hence, the $1 billion swing in farm earnings will leave Indiana looking stronger in 1989 than the majority of sectors in the economy actually will be.

### Long-term Issues

Indiana's growth in the past year and in

**Figure 1**
**Indiana's Share of Earnings, 1978 and 1988**
**(percent of nation)**




*Source: Computed via the Economic Development Network (EDIN) from data provided by the U.S. Bureau of Economic Analysis*

the year ahead must be understood in a longer-term perspective. We are not keeping pace with the nation; there are strong differences in the growth patterns within the state. Consider these fragments of evidence:

* Relative to the nation, Indiana continues to decline. Population and personal income growth rates in the state remain slower than the nation as a whole. Outmigration is no longer at a high rate, but the state's aging population offers little hope for major gains through natural increase. Total personal income in the state has continued to grow less rapidly than in the nation. In 1987, Indiana enjoyed 2.024% of the nation's personal income; in 1988 this figure is estimated to be 2.021%, and the 1989 figure is expected to fall below 2%. This continues a trend that has been virtually unbroken since 1969.

Indiana's rank in earnings among the states is lower in 1988 than it was in 1978. (Data in this section are for the second quarter of each year respectively; these are the most recent data available at this writing.) **Table 1** presents the Hoosier state's rank in earnings for major sectors of the economy. Only in state and local government has the state's rank among the 50 states improved, and that by just one place. In all other sectors Indiana is lower in rank that it was 10 years ago and no better than in the depths of the recession of 1982.

These data are reinforced graphically by **Figure 1**. Here Indiana's share of earnings originating in each sector are shown as a percent of total earnings in that sector nationally. In all sectors, except Federal government, Indiana's share declined from 1978 to 1988.

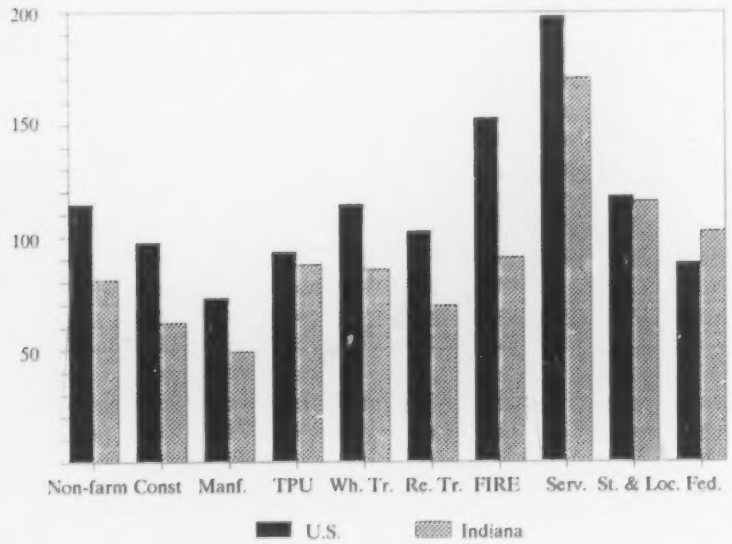
That decline in share is the result of slower growth in each sector for Indiana than in the nation as a whole. This slower growth is seen in **Figure 2**. Nominal nonfarm earnings grew from 1978 to 1988 by 114.3%. Indiana's growth was just 81.0% for that decade. The greatest discrepency between growth rates for the nation and the state was in Finance, Insurance, and Real Estate: U.S. growth was 152.9%, Indiana 90.8%. Only in earnings from federal government employment did Indiana outperform the nation.

Employment growth within the state from October 1978 to October 1988 was 263,100 jobs, or 10.7%. There are, however, still 27 counties with *lower* levels of employment in 1988 than they enjoyed ten years earlier. These counties are mainly along the western border of the state and in a band of counties running southeast from Carroll to Fayette.

**Figure 3** shows that the experiences of our 92 counties in recession and recovery have been quite different. Of the 65 counties with higher employment in 1988 than in 1978, 21 experienced no decline in employment between 1978 and 1982. Monroe, Hamilton, Johnson, Porter, and 27 others gained jobs in both the recession and in the recovery periods. A more expected pattern was found in 44 counties. Marion, Allen, Elkhart, St. Joseph, and 40 others had declines in employment during the recession, but bounced back to record gains from 1982 through 1988 that overcame the earlier losses.

The story for the remaining 27 counties is less positive. There were 18 counties, including Vigo, Grant, Howard, and Wabash, that experienced declines in the recession but have not yet had

**Figure 2**
**Growth in Earnings by Industry, 1978 to 1988**
**(1988 as a percentage of 1978)**




*Source: Computed via the Economic Development Network (EDIN) from data provided by the U.S. Bureau of Economic Analysis*

sufficient job growth to have employment levels in 1988 above those of 1978. Five counties (Lake, Jay, Sullivan, Clay and Rush) had declines in employment in both periods. Another four are truly different: Spencer, Warren, Pike, and Brown are the contrarian counties with minor gains in employment during the recession that were wiped out by losses during the recovery.

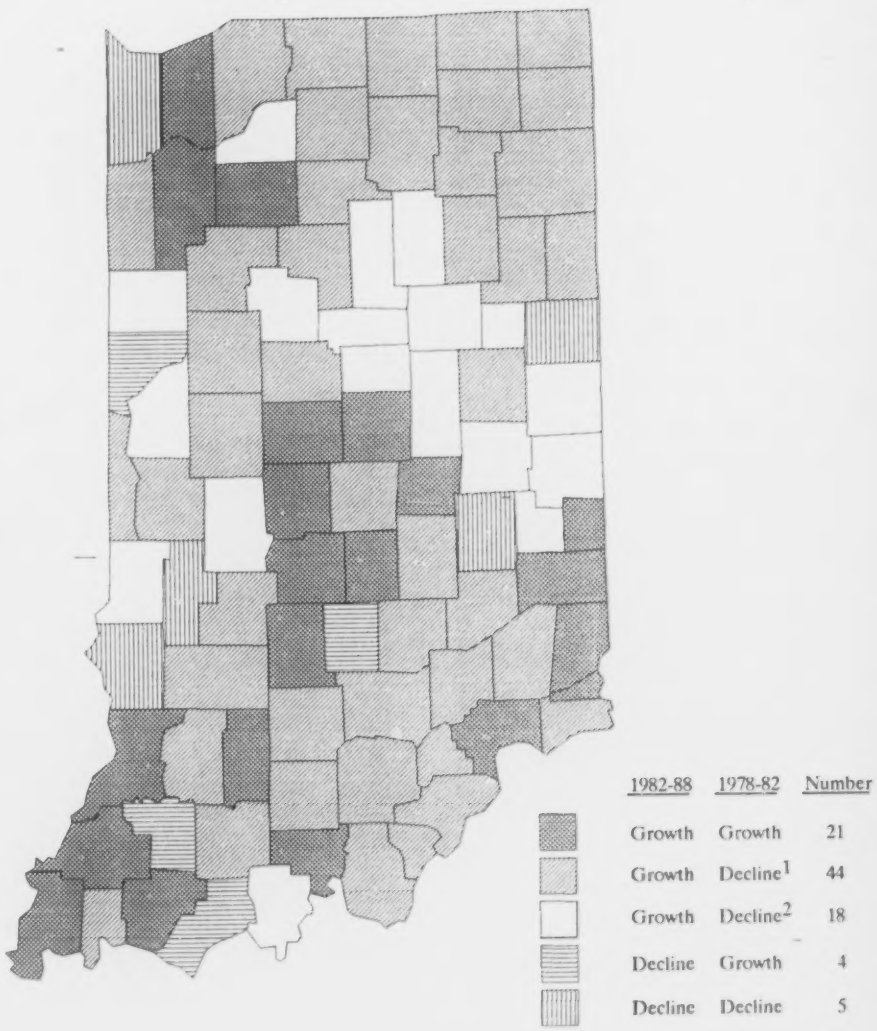
In sum, the state is growing, will continue to grow in 1989, but has failed to keep pace with the nation and exhibits strongly divergent patterns of change among its counties. These findings suggest that the tasks of economic development for the new administration are different from those faced by its predecessors. Divergent patterns of development and growth may demand more attention than general improvments in economic well-being.

**Table 1**
**Indiana's Rank Among the 50 States**

| | *1978* | *1982* | *1988* |
|---|---|---|---|
| Non-farm Earnings | 11 | 14 | 14 |
| Construction | 12 | 16 | 16 |
| Manufacturing | 9 | 9 | 10 |
| Trans., Comm., & Util. | 13 | 15 | 15 |
| Wholesale Trade | 14 | 19 | 20 |
| Retail Trade | 11 | 14 | 16 |
| FIRE | 16 | 19 | 19 |
| Services | 16 | 19 | 19 |
| State & Local Gvt. | 17 | 19 | 16 |
| Federal Government | 26 | 26 | 26 |

*Source: Computed via the Economic Development Information Network from data provided by the U.S. Bureau of Economic Analysis.*

**Figure 3**
**Employment Growth Patterns, 1978-88**




*1. For these counties the growth from 1982-88 offset the decline from 1978-82.*
*2. For these counties the growth from 1982-88 did not offset the decline from 1978-82.*

*Source: Computed via the Economic Development Information Network from data provided by the Indiana Department of Employment and Training Services (IDETS).*

## Indianapolis

**Robert Kirk**

*Department of Economics, Indiana University-Purdue University at Indianapolis*

The Indianapolis economy has been moving on the fast track for the past several years. However, in 1989 the rate of performance will slow, from a 4% rate of employment growth to a 2.5%-3% rate. The primary impetus behind this slower rate is the concern of the Federal Reserve System about inflation and the expression of that concern through upward pressure on interest rates--at least during the first part of the year.

Consumer durables and residential housing starts, which are interest-rate sensitive, will be negatively affected. Also, as national discussion focuses on ways to deal with the federal budget deficit, consumer confidence may be weakened. Typically, when uncertainty increases, the consumer adjusts by postponing purchases of durable goods such as automobiles.

Other factors affecting demand for vehicles are the ability to pay the price of a new car and the age distribution of the population. More weeks of work are required to earn the price of a car than before. However, the consumer has adjusted by extending the maturity on the car loan to keep the monthly payment at a reasonable level.

Demographically, at one end of the age spectrum the pool of first-time car buyers is shrinking. At the other end people are living longer and more have private pension income, but the elderly tend to spend on services rather than durables. Therefore, buyer incentives will continue to be a feature of the automobile market.

### Indianapolis Performance

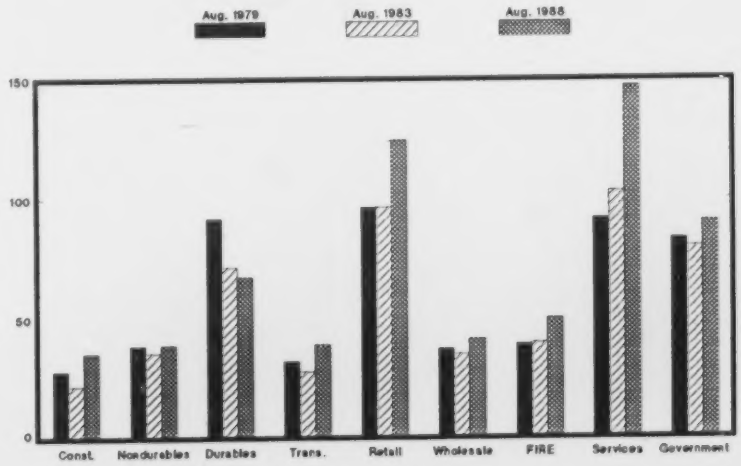
How has Indianapolis performed compared to the region during the current expansion? **Table 1** shows the percentage change in total employment for selected metropolitan areas in the Great Lakes region.

There have been significant employment shifts by industry in the Indianapolis economy (**Figure**). The year 1979 was a peak in the business cycle in the Midwest before the 1980-82 recession, while 1983 was the first year of expansion. Growth in employment has been concentrated in construction, retailing (including restaurants), business services, and health services. Some of the components of business services are direct mail advertising, janitorial services, computer programming, temporary help, management consulting, and public relations. Many of these activities have shown growth, locally and nationally, because of a process of contracting out to specialized firms that can take advantage of economies of scale. Urban areas provide sufficiently large markets and specialized labor pools to support the degree of specialization found in the industries mentioned above.

**Table 1**
**Changes in Establishment Employment, Selected Metropolitan Areas, Aug. 1983-Aug. 1988 (percent change)**

| | |
|---|---|
| Columbus | 24.5 |
| Indianapolis | 23.5 |
| Cincinnati | 22.3 |
| Detroit | 17.6 |
| Chicago | 15.2 |
| St. Louis | 13.8 |

**Figure**
**Employment by Industry, August 1979, 1983, and 1988 (in thousands)**



**Construction**

Building cranes will continue to loom against the Indianapolis skyline as major construction projects progress or are initiated. The list includes Bank One, Eli Lilly, the Circle Centre Mall, the State Office Complex, and IUPUI. However, difficulty in obtaining financing because of increasing vacancy rates may put a damper on new office building projects unless the developer can obtain substantial preleasing.

What about the residential housing market? Upward pressure on mortgage rates will lower housing starts. Also, the 1986 Tax Reform Act raised the cost of owning homes by lowering marginal tax rates, reducing the value of housing deductions, and by raising the standard deduction, making it more difficult to generate housing deductions. At the local level, housing inventories, expected rates of appreciation in housing prices, and population shifts by age play a role. Opportunities for appreciation of home values will vary by location within the metropolitan area. **Table 2** shows estimates of population change by age group for the Indianapolis metropolitan area, Indiana, and the U.S., 1980-87.

Home-buying age groups continue to show large percentage increases, although this demographic stimulus to housing is diminishing. To meet the needs of the expanding 60+ market, alternative ways to supply housing, such as conjugate housing, may become attractive. To meet the need to rehabilitate substandard housing, the Indianapolis Neighborhood Housing Partnership has been established. A revolving loan pool derived from corporations, foundation endowments, religious organizations, Community Development Block Grants, and individuals will be developed.

**Table 2**
**Estimated Population Change**
**Indianapolis, 1980-87**

| *Age Group* | *Percent Change* |
|---|---|
| 0-4 | 7.7 |
| 5-9 | -2.4 |
| 10-14 | -7 |
| 15-19 | -10.7 |
| 20-24 | -1.9 |
| 25-29 | 4.1 |
| 30-34 | 10.6 |
| 35-39 | 28.8 |
| 40-44 | 29.6 |
| 45-49 | 11.2 |
| 50-54 | -5.2 |
| 55-59 | -4.6 |
| 60-64 | 14 |
| 65-69 | 14.3 |
| 70-74 | 12.5 |
| 75-79 | 14 |
| 80-84 | 14.1 |
| 85+ | 29.9 |
| Indianapolis | 5.3 |
| Indiana | 0.7 |
| United States | 7.4 |

**Nonprofits**

Indianapolis has become the home of many nonprofit groups, including membership, social, and religious organizations. The 1986 Tax Reform Act may affect the nonprofits in two ways--both positively and negatively. As marginal tax rates decrease, the resulting increase in after-tax income makes it possible for the household to *increase* the charitable contribution. On the other hand, as marginal tax rate decrease--thereby lowering the value of the tax write-off--the resulting rise in the price of giving will *decrease* the charitable contribution.

The tax change is only one factor that affects the level of giving. Other factors include increases in employment and real per capita personal income. Nonprofits have been giving more attention to the development of revenue-generating activities. Indianapolis has become a national center for teaching, research, and public service in philanthropy through the establishment of the Center on Philanthropy on the IUPUI campus.

As the Figure indicates, there has been a large increase in retail employment. This employment growth represents the entry of many firms in to the marketplace. Can the local personal income growth support the employment growth? One indicator is the number of dollars of real personal income per employee hour in retailing. Since this ratio has declined in recent years, the implication is that the 1989 retail marketplace will be a highly competitive one.

**Supply-side Constraints**

As the population estimates of Table 2 indicate, from 1980 to 1987 there have been contractions in the 15-19 and 20-24 age groups--from which new entrants into the labor force are drawn. Since 1985, the Indianapolis labor market has grown faster than both the U.S. and Indiana labor markets. This suggests no serious labor supply constraint. On the other hand, when 10,000 apply for jobs at a new auto plant while there are lengthy lists of job openings at the $4-$6 per hour level, there appears to be a wage rate below which some people are unwilling to supply their labor. Employers are adjusting by hiring older workers, substituting capital for labor where possible, and raising wage rates.

Another supply constraint is the Indianapolis airspace, specifically its waste assimilative capacity. We dispose of our waste products in the air, but its capacity

to absorb waste is limited. Since capacity is a scarce resource but commands no price, we tend to overuse it at times. In 1987, the Environmental Protection Agency indicated that the inventory of sources of air pollution, as well as air pollution planning, should extend beyond Marion County to include the seven suburban counties. Given the spillover nature of air pollution, coordination across county lines of efforts to deal with air pollution needs to be developed. This effort will challenge local and state governmental officials in 1989 and beyond.

## Richmond

**Ashton I. Veramallay**

*Director, Center for Economic Education, Indiana University East*

As the national economy goes, so goes Richmond's. Given this interdependence, the Richmond area economy can expect slow growth in 1989. As the current national economic expansion, the longest in peacetime history, enters its twilight phase, real GNP growth will increase by less than 3%; inflation will rise to about 5.5%; and unemployment will decline to about 5%.

For the local economy, this expected performance in 1989 means that the unemployment rate will hover around 7%. At least 50% of the firms responding to my survey are being affected adversely, in varying degrees, by current economic conditions. Employment growth in the manufacturing sector will be sluggish unless it is offset by internal business expansion. An erosion of this sector's base is likely if labor costs are not contained. It is important to note that wages constitute more than 60% of the gross local income. Consequently, the flight of high-paying jobs from Richmond will ultimately affect both economic growth and quality of life.

The service sector will continue to expand, as the demand for services of various kinds increases. Service jobs are often part-time, and their wage rate is below that of the manufacturing sector. Also, real personal income growth will increase by less than 2%, and the county's median household income will remain below $20,000, with aggregate demand lagging behind the 1986-88 levels.

This phenomenon is partly attributable to the fact that at best 20% of the county's adult population did not graduate from high school. Low education means low skills, low wages, low purchasing power for goods and services, and hence a low quality of life. It also translates into a higher dependency ratio with increased transfer payments.

Consumer spending will remain fairly stable in 1989. If voter preference as expressed in the recent presidential election is an indication of consumer confidence in the economy, then the results augur well for the retail and service sectors. The initial fears following the 1987 stock market crash, at least those associated with consumer spending, were not justified in 1988. Consumers are again entering the market to buy big-ticket items such as automobiles, houses, appliances, entertainment sets, furniture, and recreational amenities. Local merchants can therefore expect a relatively good year if consumer confidence continues.

Investment spending, on the other hand, will grow at a slow pace. Although about 90% of the surveyed firms are optimistic about business conditions in 1989, only 38% of them plan to expand. If inflation increases it will lead to high rates of interest, which could further dampen capital spending. Improvements in plant, equipment, and structures will, however, generate positive effects within the local economy.

Further, the dollar's depreciation will boost sales of local firms engaging in international trade. The lagged effects in exchange rate movements, coupled with the belief among many U.S. consumers that imported products have superior qualities that make them attractive despite price increases, will slow the adjustment process to eliminate the trade deficit. Continuing deterioration of the dollar will invite tight monetary policy, eventually driving interest rates upwards with concomitant effects on the credit markets. Finally, if the international economy experiences slow or flat growth, it will curtail U.S. exports and worsen the trade deficit.

## South Bend-Mishawaka/ Elkhart-Goshen

**John E. Peck**

*Professor of Economics and Director, Bureau of Business and Economic Research, Indiana University at South Bend*

This year-end assessment of economic conditions in the South Bend-Mishawaka and Elkhart-Goshen communities is based on an analysis of the latest available economic indicators tracked by Indiana University at South Bend's Bureau of Business and Economic Research. A look at the indicators, particularly those relating to local employment, suggests that both areas continue to experience growth at a rate outpacing that expected at midyear (*IBR*, June 1988).

**Table**
**Economic Indicators**

| | South Bend-Mishawaka | | | | | Elkhart-Goshen | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *August 1988* | *July 1988* | *Percent Change* | *August 1987* | *Percent Change* | *August 1988* | *July 1988* | *Percent Change* | *August 1987* | *Percent Change* |
| *Employment Data* | | | | | | | | | | |
| Establishment Employment[1] | | | | | | | | | | |
| Nonagricultural Employment | 129.0 | 128.7 | 0.2 | 123.5 | 4.5 | 197.1 | 196.1 | 0.5 | 184.5 | 6.8 |
| Manufacturing Employment | 72.7 | 74.0 | -1.8 | 74.4 | -2.3 | 181.4 | 180.8 | 0.3 | 165.9 | 9.3 |
| Nonmanufacturing Employment | 160.8 | 160.1 | 0.4 | 151.5 | 6.1 | 219.5 | 218.6 | 0.4 | 211.7 | 3.7 |
| Unemployment Rate | 5.1 | 5.1 | n/a | 5.5 | n/a | 3.8 | 3.8 | n/a | 4.7 | n/a |
| Help Wanted Advertising[2] | 156.1 | 139.7 | 11.7 | 148.7 | 5.0 | 181.9 | 176.3 | 3.2 | 157.4 | 15.6 |
| *Utilities*[3] | | | | | | | | | | |
| Industrial Electricity Sales | 169.9 | 167.9 | 1.2 | 166.1 | 2.3 | 224.4 | 219.6 | 2.2 | 220.2 | 1.9 |
| Commercial Gas Sales | 88.8 | 81.3 | 9.2 | 99.4 | -10.7 | 80.5 | 69.9 | 15.2 | 98.2 | -18.0 |
| Industrial Gas Sales | 75.7 | 85.9 | -11.9 | 114.4 | -33.8 | 58.2 | 59.7 | -2.5 | 54.6 | 6.6 |
| *Retail Car and Truck Sales*[4] | | | | | | | | | | |
| New Passenger Car Sales | 66.5 | 78.9 | -15.7 | 88.8 | -25.1 | 69.3 | 72.6 | -4.5 | 80.2 | -13.6 |
| New Truck Sales | 235.3 | 267.8 | -12.1 | 294.0 | -20.0 | 119.0 | 122.7 | -3.0 | 119.5 | -0.4 |
| *Housing Construction Data*[5] | | | | | | | | | | |
| Estimated Value of Permits | 807.9 | 597.0 | 35.3 | 694.2 | 16.4 | 506.5 | 401.9 | 26.0 | 332.3 | 52.4 |
| Number of Permits Issued | 145.2 | 112.2 | 29.4 | 156.4 | -7.2 | 138.0 | 121.8 | 13.3 | 106.1 | 30.1 |
| Average Value Per Permit | 577.6 | 565.0 | 2.2 | 468.8 | 23.2 | 376.9 | 374.9 | 0.5 | 349.6 | 7.8 |
| *Residential Real Estate Data* | | | | | | | | | | |
| Number of Active Listings | 1186 | 1183 | 0.3 | 1288 | -7.9 | 1309 | 1299 | 0.8 | 1179 | 11.0 |
| Closed Sales | | | | | | | | | | |
| Average Days Listed | 54 | 53 | 1.9 | 51 | 5.9 | 84 | 87 | -3.4 | 86 | -2.3 |
| Average Market Price | 64,715 | 63,452 | 2.0 | 56,250 | 15.0 | 62,510 | 61,578 | 1.5 | 63,314 | -1.3 |
| Percent of Sale to List Price | 94.3 | 95.0 | -0.7 | 95.8 | -1.6 | 95.0 | 95.0 | 0.0 | 99.0 | -4.0 |

*1. For South Bend, 1969 = 100; for Elkhart, 1967 = 100.*
*2. For South Bend, 1967 = 100; for Elkhart, 1984 = 100.*
*3. 1967 = 100.*
*4. For South Bend, 1967 = 100.*
*5. For South Bend, 1967 = 100, St. Joseph County excluding cities of South Bend, Mishawaka, Osceola, Walkerton, and New Carlisle. For Elkhart, 1970 = 100, Elkhart County excluding cities of Elkhart, Goshen, Nappanee, and Millersburg.*

The accompanying **Table** summarizes the various indicators of local economic activity. These figures are seasonally adjusted and, with the exception of the unemployment rates and real estate data, are index numbers expressed as a percentage of base-year values. Comparative indicators and percentage changes are given for July and August 1988. To highlight longer-term trends, the same figures are also given for August 1987.

**South Bend-Mishawaka**

News about the South Bend/Mishawaka economy is somewhat mixed. The growth in non-agricultural employment over the past year (4.5%) was twice what was forecast. On the other hand, the month-to-month and year-to-year declines in manufacturing employment are of some concern. There has been hope that since the manufacturing employment index has fluctuated in the narrow range of 73 to 75

for about three years--that is, manufacturing jobs currently total between 73% and 75% of the 1969 total--the two-decade pattern of a declining number of manufacturing jobs may be ending. But although the August index is not dramatically lower, when the situation is placed in light of the recent announcement by AM General that its Chippewa military truck plant (employing 650 people) would be closing, the possibility of renewed deterioration arises. Also fueling this concern is that transportation equipment manufacturing employment was off 800 jobs from last August to this August. Area analysts will make a point of monitoring manufacturing employment closely.

One cannot help but be impressed by the strength in new housing permits. This index has been exceptionally strong and running counter to national trends for the past 18 months. The continuing softness of the passenger car sales figure, however, is more reflective of conditions in the automobile business nationally.

**Elkhart-Goshen**

As usual, the most startling Elkhart-Goshen trends lie in employment data. About 55 percent of Elkhart County's employment is found in manufacturing, as compared to about 25 percent nationwide; this has been the fastest growing sector of the area's work force. The 9.3% increase in the index from last year to this year was the largest 12-month gain in memory and helped lead to an exceptionally high help-wanted index and an exceptionally low unemployment rate. Elkhart's labor shortage has caused the area's leadership to advertise for workers in the help-wanted sections of out-of-state newspapers. Sectors leading the year-to-year gain included recreational vehicles, lumber and wood products, furniture, services, and retail trade.

As was the case with South Bend-Mishawaka, Elkhart-Goshen housing indicators were especially strong but car sales were particularly soft. Again, the strength of the housing market is a local phenomenon that runs counter to the national trend.

**The Outlook**

The outlook for South Bend-Mishawaka and Elkhart-Goshen continues to suggest that local employment growth will experience some moderation in the coming months, given what is expected to be moderating growth nationally. Most forecasters see growth slowing to an annual rate of between 2% and 3% in 1989. For the local economies, other things being equal, this should translate into employment growth of about 2% in South Bend-Mishawaka and 4% in Elkhart-Goshen.

## Terre Haute

**Marvin Fischbaum**

*Professor of Economics, Indiana State University*

In 1988, local economic activity maintained a fairly even keel. In contrast to recent history, no new plant closings were announced. At least the bleeding has stopped; 1989 may be the year when meaningful recovery begins.

In 1986 and 1987 the unemployment rate in the Terre Haute area fell only because the labor force decreased more rapidly than the number of jobs. This year saw both labor force and jobs confined to a fairly narrow range. MSA manufacturing employment stayed between 9,800 and 10,100. September, the most recent month for which data is available, saw the peak in nonmanufacturing employment at 44,800, while August saw the trough at 41,500. Seasonal factors clearly dominated any trend. For much of the year, unemployment rates ran at their lowest levels of the 1980s, but as the labor force began to expand, seasonally adjusted unemployment rates began to rise. Paradoxically, September brought not only the year's highest level of employment and the year's longest average work week in manufacturing (43.3 hours), but also the highest seasonally adjusted unemployment rate.

For the broader region the employment picture was more clearly positive. Nearby non-metropolitan counties, including Vermillion and most notably Sullivan County (where unemployment problems had been especially severe), benefited from improving labor markets.

The record of construction activity reinforces the impression that local economic conditions are no longer deteriorating and may even be getting better. For much of the year, construction employment ran 20% to 25% above the level of 1987. Year-to-year comparisons show a rise of 12.5% in the value of Vigo County residential building permits and of more than 50% in the value of non-residential permits.

This activity, however, was largely embodied in projects long in the works. The downtown renaissance has all but stalled. Plans to renovate the old Meis Department Store fell through, but the Alliance for Growth and Progress has agreed to underwrite the demolition of the structure. Plans to turn the Terre Haute House into a luxury suites hotel have been off again, on again. Currently there is renewed optimism.

New commitments for construction were not of the blockbuster variety, but they were widespread. For example, the

Honey Creek Mall area will be the site of a number of new retail businesses, including a strip shopping center anchored by Wal-Mart, a freestanding Sam's Wholesale Club, a Phar-mor Drug Store, and an exotic car dealership. A survey of 187 local businesses conducted by the Center for Research and Management Services at Indiana State University found that 23% of the surveyed businesses expanded their plants in the past year, while 31% engaged in renovation. For the coming year, 22% plan to expand and 25% plan to renovate. Of the 38 manufacturing plants in the survey, 42% expanded and 40% renovated; 39% plan to expand in 1989 and 37% plan to renovate.

The residential real estate market has been steady. The number of homes sold increased substantially, but average time on the market is essentially unchanged from a year ago, and the average selling price actually declined slightly.

*The new year will almost certainly be better for providers of seed, fertilizer, herbicides, pesticides, and drought insurance.*

Farmers endured the worst drought in 50 years. They were helped by higher prices and--where crops failed--by government assistance. On soils that hold moisture, crops came in with much better yields than had been anticipated. With smaller crop carryovers, farmers look forward to a better 1989. The new year will almost certainly be better for providers of seed, fertilizer, herbicides, pesticides, and drought insurance.

There are signs that manufacturing may be starting to come back. New firms are emerging from the ashes of the old. Specialty Blanks, formed out of discontinued operations at Alcan, is doubling its capacity. Shenango Industries will utilize 150,000 square feet of the Stran Steel building and will initially employ 125 persons to manufacture castings. What was Indiana Gas and Chemical will reopen as Terre Haute Coke, with output perhaps at 80% of the old level.

Evergreen Express is likely to initiate daytime operations and add substantially to its work force. It may also open an aircraft maintenance facility. Hercules has stated that Terre Haute is in competition with another city for a possible $100 million expansion of production facilities. And BASF is considering locating in Terre Haute an automotive paint factory that would employ 500 workers. Initially, the community reacted enthusiastically to the BASF proposal. But after strong opposition developed at an alternative site (Evansville), and after BASF made it clear that some of the hazardous waste to be stored on the site would be trucked in from other locations, local opinion has been sharply and vocally divided.

During the 1980s Terre Haute's economy has consistently underperformed both the state and the nation. Local incomes have fallen further behind the state and national averages. In 1987, annual wages averaged $18,100 in Terre Haute--the second lowest of the state's 12 metropolitan areas. As in previous years, the rate of increase was lower than the national average. Perhaps 1989 will be different. The survey by the Center for Research and Management Services revealed that although local businesses are not overly optimistic regarding their own prospects, 74% of the firms surveyed believe that the Terre Haute economy will improve over the next two years. Perhaps the entry of new industry will turn the tide.

## Gary-Hammond-East Chicago (Calumet Area)

**Leslie P. Singer**

*Professor of Economics, Indiana University Northwest*

In the past three years the northwest Indiana regional economy has begun to gain a more diversified base. This process is likely to continue for ten years or longer.

First and most decidedly, the region is moving toward a metro economy, even though individual urban and nonurban political fiefdoms may not as yet admit the existence of these inevitable forces. Our old economic base, manufacturing, has now stabilized after shrinking to a much lower level; newly entering firms provide much-needed diversification.

Economically, northern Indiana is tied to the Great Lakes region much more than to the state or the nation. During the recession of 1973-75 and the recovery that lasted until 1978, the Midwest and northwest Indiana almost paralleled each other. However, since the dramatic downturn from 1979 to 1982, the Midwestern and northwest Indiana manufacturing sectors slumped and never regained the 1973 output levels, while the U.S. industrial sector has recovered (output and employment are now about 50% above 1973 levels).

Since the end of 1986 the Midwestern manufacturing sector has expanded at rates that exceeded U.S. rates by almost 1%. Northwest Indiana has reflected these trends as well, and they are likely to continue until about the second half of 1989.

Total establishment employment in northwest Indiana rose at an annual rate of 3.51% in the third quarter of 1988, compared with 3.72% in the state. Nonmanufacturing employment rose 4.08% in

**Table**
**Northwest Indiana PMSA Employment and Payroll Short-Term Forecast**
**(Employment in thousands)**

| | *1988:2* | *1988:3* | *1988:4* | *1989:1* | *1989:2* | *1989:3* | *1989:4* | *1990:1* | *1990:2* | *1990:3* |
|---|---|---|---|---|---|---|---|---|---|---|
| Manufacturing | 56.67 | 56.90 | 57.57 | 57.86 | 58.83 | 58.32 | 60.61 | 61.07 | 67.58 | 59.75 |
| Steel Mills | 35.37 | 35.20 | 35.90 | 35.93 | 36.41 | 36.19 | 37.14 | 36.99 | 37.01 | 36.22 |
| Other (including petroleum) | 21.30 | 21.90 | 21.67 | 21.93 | 22.42 | 22.13 | 23.47 | 24.08 | 24.57 | 23.53 |
| Nonmanufacturing | 171.70 | 174.00 | 176.12 | 174.81 | 178.84 | 181.25 | 179.80 | 178.15 | 185.23 | 189.32 |
| Construction | 12.77 | 14.17 | 11.79 | 11.12 | 13.15 | 15.11 | 11.21 | 11.28 | 14.43 | 16.04 |
| Trade | 54.33 | 55.53 | 55.28 | 53.82 | 56.21 | 57.69 | 54.52 | 55.50 | 58.09 | 59.84 |
| Services, Trans. & Util., Health | 73.07 | 73.73 | 74.55 | 75.06 | 76.92 | 77.93 | 80.59 | 79.16 | 80.84 | 82.12 |
| Government | 31.60 | 30.57 | 31.39 | 32.62 | 32.82 | 31.46 | 32.58 | 33.10 | 34.03 | 32.36 |
| **Total** | 228.37 | 230.90 | 233.69 | 232.67 | 237.67 | 239.57 | 240.41 | 239.22 | 246.81 | 249.07 |
| Manufacturing Payroll ($ billion) | 1.8172 | 1.8645 | 1.9240 | 1.9449 | 1.9841 | 2.0138 | 2.1118 | 2.1198 | 2.1521 | 2.1952 |

the region compared with 4.15% in the state. In other words, northwest Indiana is keeping pace with the state as a whole--good news, considering that the region was doing so much worse than the state for the first half of the decade.

Manufacturing employment in the region increased 1.18% and steel employment rose .54%. It appears that for every 1% increase in real GNP, local employment tends to rise about .91% and manufacturing employment tends to rise about .29%. The manufacturing payroll in nominal dollars tends to rise about 1.28% for every 1% increase in real GNP. This relationship is expected to hold in 1989.

Manufacturing payroll was $1.94 billion (nominal) in the third quarter of 1983 during the short recovery. Subsequently it declined and then recovered, reaching $1.95 billion (seasonally adjusted, nominal) in the third quarter of this year. We expect nominal payroll to rise a little more than 4.5% in 1989, which may be below the rate of inflation. The foregoing projections are based on an expected real GNP growth rate of about 3.51% and a regional inflation rate of about 4.85%.

It would appear on the surface that the real manufacturing payroll will make almost no contribution to northwest Indiana growth in aggregate employment. However, upon closer examination a more complex relationship emerges. Nominal manufacturing payrolls stimulate the local economy and cause employment to rise even though the real (deflated) payroll declines. This money illusion appears to be quite consistent. For example, even in periods of zero growth of real local payroll, local nonmanufacturing employment rises about .395% for every 1% increase in the nominal payroll after other injections of money into the regional economy are taken into account.

These other injections include federal, state, and local transfer payments, private pension remittances, contributions of public and private insurance, and dissaving (depletion of accumulated wealth, and dividends and interest receipts). As we have noted before, contributions to the local economy (and to its aging population) from nonwage income are rising at more than double the rate of wage income.

The local economy is thus moving toward a different and better-integrated structure, one that is sustainable and potentially stable in the long run. One implication is that a moderate rise in interest rates or a rise in the deficit, which would increase the yield of locally held liquid assets or transfers, may induce a marginal rise in consumption and consequently a marginal increase in nonmanufacturing employment.

Finally, we must gauge the effect of foreign trade on the local economy. The impact of exports is indirect, even though USX is expected to export more than 1 million tons of steel at almost $800 a ton in 1989.

The higher price of exports, as compared to an average domestic price of about $460 a ton, will contribute to USX's profits on account of the depreciated dollar. However, most of the impetus for a rise in local derived demand for steel will come from a decline in imports of foreign cars and from a rise in exports of electronics, chemicals, pharmaceuticals, and other products, which may raise the demand for local flat rolled steel and structural steel. Furthermore, national investment in structures and non-electrical machinery may rise in 1989 at an anticipated annual rate of about 7.5%, even though investment in the less steel-

intensive information and communication sector is likely to proceed at a slower pace than in 1988.

All of these anticipations are summarized in the forecasts in **Table 1**. Four things could vitiate the forecasts:

* A new wage spiral induced by collective bargaining agreements in leading manufacturing sectors in 1989;
* An effort to raise or maintain the exchange rate of the dollar in 1989;
* Drastic reductions in public spending on durable goods (including defense) in an effort to reduce the deficit without cutting public consumption expenditures; and
* A significant rise in income and corporate taxes as opposed to consumption taxes (with substantial exclusions for necessities).

Individually, none may become a serious handicap to growth. The tail end of a long recovery is fragile, however, and so any combination of the above may induce a slowing down or possibly even a reversal in the pace of regional economic growth in 1989.

**Table 1**
**Employment (establishment) and Unemployment (residents), 1984-88**

| | *Total Nonfarm Employment* | *Manufacturing Employment* | *Nonmanufacturing Employment* | *Unemployment Rate (%)* |
|---|---|---|---|---|
| *Louisville Metropolitan Area* | | | | |
| *Annual* | | | | |
| 1984 | 396.7 | 89.2 | 307.6 | 8.6 |
| 1985 | 410.8 | 87.0 | 323.7 | 8.0 |
| 1986 | 421.2 | 86.2 | 335.1 | 7.1 |
| 1987 | 436.0 | 86.3 | 349.7 | 6.9 |
| *Quarterly* | | | | |
| 1987:1 | 430.4 | 86.5 | 344.0 | 7.0 |
| 1987:2 | 431.8 | 86.2 | 345.6 | 7.2 |
| 1987:3 | 436.1 | 86.0 | 350.0 | 7.0 |
| 1987:4 | 445.8 | 86.5 | 359.4 | 6.5 |
| 1988:1 | 452.3 | 87.3 | 365.0 | 6.2 |
| 1988:2 | 453.0 | 87.7 | 365.1 | 6.6 |
| 1988:3 | 453.4 | 88.1 | 365.4 | 6.0 |
| *Clark, Floyd, and Harrison Counties* | | | | |
| *Annual* | | | | |
| 1984 | 51.4 | 13.0 | 38.4 | 9.2 |
| 1985 | 53.4 | 13.1 | 40.3 | 8.1 |
| 1986 | 55.6 | 13.2 | 42.5 | 6.3 |
| 1987 | 58.3 | 13.3 | 45.0 | 5.9 |
| *Quarterly* | | | | |
| 1987:1 | 58.0 | 13.2 | 44.8 | 9.1 |
| 1987:2 | 57.9 | 13.1 | 44.8 | 5.9 |
| 1987:3 | 58.3 | 13.3 | 45.0 | 5.9 |
| 1987:4 | 58.8 | 13.4 | 45.3 | 5.6 |
| 1988:1 | 59.0 | 13.4 | 45.6 | 5.0 |
| 1988:2 | 58.7 | 13.0 | 45.8 | 4.8 |
| 1988:3 | 57.8 | 13.0 | 44.7 | 5.7 |

*Sources: Indiana Department of Employment and Training Services; Kentucky Cabinet for Human Resources.*

## Jeffersonville-New Albany (Louisville Area)

**Fay Ross Greckel**

*Professor of Economics, Indiana University Southeast*

The Louisville area economy, like that of the nation, continued to expand in 1988. Growth was stronger than expected in some areas, but weaknesses were evident in others. The overall expansion should continue well into 1989, but at a slower pace than in this year and with significant exceptions.

**Table 2**
**Emergency Food Aid Provided by Dare to Care**

| *Period* | *Number of Food Packages Provided*[1] |
|---|---|
| Jan-Sept 1983 | 54,500 |
| Jan-Sept 1984 | 58,500 |
| Jan-Sept 1985 | 60,200 |
| Jan-Sept 1986 | 60,700 |
| Jan-Sept 1987 | 57,200 |
| Jan-Sept 1988 | 61,900 |

*1. Each package contains three to seven days' food supply for one person. Recipients must be referred and may obtain aid a maximum of four times per year.*

*Source: Dare to Care, Louisville*

The economy's strength, as well as some of the weaknesses, can be seen in the employment statistics shown in **Table 1**. Establishments in the seven-county metropolitan area (Clark, Floyd, and Harrison counties in Indiana and Jefferson, Oldham, Shelby, and Bullitt counties in Kentucky) employed nearly 20,000 more workers in the third quarter of 1988 than for the same period a year earlier. This gain was the largest in the decade. Year-to-year gains since 1984 have typically been about 10,000 to 15,000. However, most of the jobs were added during the last quarter of 1987 and the first quarter of 1988. On a seasonally adjusted basis there was very little net job growth after midyear.

Manufacturing employment increased for the first time in many years. About 1,000 jobs were added, most of them in nondurable goods industries. As usual, nonmanufacturing accounted for the bulk of the employment growth. Although major gains occurred in all nonmanufacturing categories, half of the new jobs were in retailing and services. The transportation/communications/utilities sector added more than 2,000 jobs, and construction and wholesale trade employment grew by well over 1,000 jobs each.

Nearly all the net gains in employment occurred in Kentucky. The data presently available from the Indiana Department of Employment and Training Services show employment in Clark, Floyd, and Harrison counties averaging 58,500 jobs (seasonally adjusted) during the first three quarters of 1988--a gain of only 400 jobs over the same period of 1987. A slight decrease in manufacturing jobs was offset by small increases in nonmanufacturing.

Table 1 shows that the Indiana counties' employment peak was reached in the first quarter. Declines in the second and third quarters were caused partly by layoffs of temporary employees at the Census Bureau in Jeffersonville, as work on a special census wound down. Increases in retailing jobs offset a surprising decline in service-sector jobs.

Employment opportunities in the Indiana counties have probably been a little better than these statistics indicate. Early this year, Indiana revised the 1987 employment statistics for these counties sharply upward. The same sort of upward revision can be expected in early 1989. Nevertheless, the trend of declining employment in the Indiana counties is likely to continue for the next few months, if layoffs announced in several manufacturing industries materialize. Most significant would be the loss of 600 jobs at the ammunition plant in Charlestown as a result of smaller Army contracts. A few months from now a substantial number of jobs will become available at the Census Bureau as preparations for the 1990 Census accelerate.

Since commuting is common and since the number of jobs in the Kentucky portion of the metropolitan area should continue to expand (although more slowly than in 1988), employment prospects for Indiana and Kentucky residents should continue to be favorable. The Louisville Chamber of Commerce reported that during 1987, many new and expanding businesses announced major investment plans that would result in about 4,250 new jobs for the metropolitan area. Some of those jobs have already begun, but many will be coming on-line in the months ahead. More recent announcements include the prospect of nearly 1,000 more jobs at UPS after its planned $32 million facilities expansion is completed. (UPS has expressed concern over limited airport capacity, but it seems likely that the expansion of Standiford Field, already in process, will be adequate for the firm's needs.)

The prevalence of low-wage jobs in the expanding employment categories remains a concern. In fact, there are indications that the problems of marginal income and poor families are becoming more acute, despite a decrease in the number of unemployed residents. As **Table 2** shows, requests for emergency food rations from Dare to Care reached a record level for the first nine months of 1988 after declining in the same period of

**Table 3**
**Residential Building Permits, 1979-1988**
**(number of dwelling units)**

| | *Jefferson Co. KY* | *Clark Co.* | *Floyd Co.*[1] | *Harrison Co.*[2] |
|---|---|---|---|---|
| Jan-Sept 1979 | 1860 | 463 | 316 | |
| Jan-Sept 1982 | 670 | 111 | 200 | 46 |
| Jan-Sept 1983 | 1766 | 185 | 259 | 115 |
| Jan-Sept 1984 | 1649 | 193 | 166 | 78 |
| Jan-Sept 1985 | 2102 | 215 | 232 | 126 |
| Jan-Sept 1986 | 2165 | 208 | 298 | 122 |
| Jan-Sept 1987 | 3013 | 295 | 188 | 116 |
| Jan-Sept 1988 | 1807 | 249 | 334 | 126 |

*1. Number of residential units for which building permits were issued, including single-family dwellings, apartment units, and condominium units.*
*2. Excluding Corydon, for which data were not available.*

*Source: Kentuckiana Regional Planning and Development Agency.*

1987. Several social agencies and utilities also reported increases in applicants or in households having trouble paying their bills, particularly in recent months. Many of the families in trouble contain an employed adult, but the job held appears typically to be low-wage or part-time with no benefits included.

**Construction**

Construction continues to play an important role in the current economic expansion. The Louisville Chamber of Commerce tally of major business investment projects announced during 1987 showed that 644 industrial and commercial firms expected to spend more than $1.1 billion, a record, on planned expansions. Some of these are complete, others are underway, and still others have yet to be started. The chamber has not released statistics for 1988, but the many projects announced in the local papers--including expansions by American Commercial Barge Lines in Jeffersonville, Capital Holding and Tesseract in Louisville, and shopping malls and theater complexes on both sides of the Ohio River--point to another strong year. Even if some plans are never implemented, a solid base of nonresidential construction appears to be in place for 1989.

Residential construction presented a mixed picture in 1988. As **Table 3** shows, during the first nine months residential building permits rose sharply in Clark and Floyd counties, rose slightly in Harrison County, and fell drastically in Jefferson County. In all counties, construction of single-family dwellings rose. The only county in which multifamily construction is normally a major factor is Jefferson County. There, as elsewhere in the U.S., changes in income tax provisions and fear of overbuilding led to a sharp decline in multifamily building starts. Permits fell from 1,789 dwelling units in the first nine months of 1987 to 509 units in the same period for 1988. With rising interest rates adding to the other concerns, a reversal of that trend seems unlikely in the near future.

In other sectors, real estate sales rose in both southern Indiana and Jefferson County. Sales of cars and light trucks also increased in both areas.

**The Forecast**

The metropolitan area should continue to grow, albeit at a slower rate, in 1989. As in 1988, growth will be quite uneven. Manufacturing jobs should continue to increase slightly, but most job gains will again come in nonmanufacturing and in the Kentucky counties. Single-family residential construction should continue to be fairly strong as long as interest rates do not rise much further; the same should be true for real estate sales. As in the recent past, it should be a reasonably good year for most in the area, but there should be increased attention paid to the hardships faced by those who have not shared in the expansion of the local economy.

## Lafayette

**Gerald J. Lynch**

*Associate Professor of Economics, Purdue University*

Last year I speculated that the Lafayette economy would do well in 1988. I went in the right direction, but not far enough. As the national unemployment rate fell to a 14-year low, Lafayette's rate fell even more. In fact, the unemployment rate for September was 2.3%, the lowest figure recorded in the 20 years that local

unemployment data have been collected. Given that the labor force in Tippecanoe County is around 62,000, this means that there were fewer than 1,500 unemployed persons in the county in September. Furthermore, many of the people who are currently unemployed are effectively unemployable. Thus, the local economy is producing near capacity; if it is below capacity, the reason is a shortage of labor with available skills.

There are a number of job openings in the Lafayette area right now. Some of these openings are minimum-wage or slightly above minimum-wage jobs; one can look in the window of almost any grocery store or restaurant in town and see that they are hiring. However, there are also a number of skilled and professional positions currently unfilled in the local economy. Add to all of this the fact that the SIA plant will offer between 800 and 900 new jobs by September 1989--and a full 1,700 by May 1990--and the obvious conclusion is that the new jobs will not be filled solely by people from Tippecanoe County.

From 40% to 60% of these jobs will probably be filled by people from within the 8 counties surrounding Tippecanoe County. Not all of them will move into Tippecanoe County, but even those who locate in surrounding counties will have an impact on this area. Lafayette is a regional retail shopping area, a regional finance center, and a regional provider of health care. All of these areas will experience a further upturn in the coming year.

In addition, we can expect that locally produced goods and services will probably increase in price. Two that come to mind in particular are housing and labor. And although higher housing and wage costs may not be welcomed by all, both of these phenomena are part of the cost of economic growth.

## Muncie

**Robert Jost**

*Professor of Economics, Ball State University*

Indiana ranked fourth in employment growth among the 50 states in 1987. For the period of second quarter 1987 to second quarter 1988, Indiana's nominal *non-farm* personal income grew at 8.2%, ranking 16th; the major thrust came from the manufacturing and construction sectors. If the troubled farm sector is included, the growth of nominal personal income slips to a still-respectable 6.9%. The Muncie MSA shared some of the benefits of this freshet of economic activity, as nominal personal income grew 5.6% in 1986 (matching that of the state), and based on a rough imputation from 1987 payroll data, also grew significantly in that year. Between October 1987 and October 1988 manufacturing employment increased 4% in Muncie, in sharp contrast to the 2.3% decline of neighbor Anderson. Average hours worked in Muncie manufacturing increased to 44, highest among the state's MSAs and hinting at potential skill shortages in certain industries.

Mention has heretofore been made of the achievements of Horizon 91's economic development team, which combines the efforts of business, government, and labor (*IBR*, July 1987). Muncie has now added a new tool to its urban redevelopment arsenal: the central downtown and southern portion of the inner city has been given Enterprise Zone status by the Indiana Enterprise Zone Board.

The antecedents of the Indiana Enterprise Zone program can be traced to the supply-side recommendations President Reagan espoused when running for office in 1980. According to supply-side economists, enterprise zones are preferable to direct government expenditures on public services, infrastructure, or direct transfer payments targeted to residents of distressed areas. Essentially, this preference for enterprise zones is based on the premise that providing tax incentives to the private sector will unleash entrepreneurial incentives while minimizing government intrusion into the local economy. The current conventional wisdom adheres to the view that although enterprise zones do not cure economic decline, they do represent a potentially effective component of urban rejuvenation.

James Papke, who authored the well-known study on the taxation of the Saturn Corporation, has developed a systematic analytical framework for monitoring and evaluating Indiana's enterprise zones. Papke readily acknowledges an inability to adequately separate the impact of enterprise zone incentive programs on investment and employment decisions from the myriad of causal agents that influence those decisions. Nevertheless, Papke has developed a microanalytic tax simulator that captures the effects specific tax provisions have on firms differentiated by type and location. Based on preliminary data sources from ten Indiana enterprise zones, Papke tentatively concluded that the experiment, although it yielded some ambiguous results, appeared to be "worth the effort and resources expended." Final judgment on the program, Papke concluded, must await the acquisition of additional data and further research.

The cost of creating the enterprise zone's tax-incentive program is financed by shifting the tax burden to the local community outside the enterprise zone. As Muncie's designated enterprise zone is near the maximum three-square-mile

limit and includes major manufacturing firms (General Motors' Hydramatic Plant, Ontario Forge) and some 350 businesses, its tax shift must be far greater than the estimated $356,835 shift for Anderson's enterprise zone (which excludes GM's plants there). Estimates for Muncie's tax shift have become political footballs, with current estimates ranging from $750,000 to more than $2 million. As the inventory tax credit (ITC) program is scheduled to be in force for 10 years, concern has been registered that much of the tax burden will be shifted to low- and middle-income people. Obviously, the costs have to be measured against the benefits, which is hoped would include the retention and expansion of existing firms within the enterprise zone as well as the attraction of new firms to these distressed areas. It is argued that if at the margin the ITC induces a firm like Hydramatic to remain and expand production in Muncie and tips the scales of new firms toward Muncie's side, then the benefits may exceed the costs over the 10-year period.

John Schwarz and Thomas Volgy recently (see *Harvard Business Review*, March-April 1988) studied metropolitan areas under Conservative Party control in Great Britain that had initiated experiments with enterprise zones in 1981, and areas under Labor Party control that had simultaneously created enterprise boards to intervene directly in local economies by investing public funds in endangered but potentially strong private firms. (This approach is similar to the Chrysler bailout in the U.S.) The enterprise boards used a "social cost accounting" program that in effect required the job program to be self-financing. This constraint required the enterprise board to spend no more to save or create a job than it would otherwise spend on unemployment benefits and foregone taxes. Recent evaluation of the relative benefits of the two programs revealed that the enterprise zones have stimulated little new economic activity or employment. Moreover, what little growth occurred frequently came at the expense of areas adjacent to the enterprise zone. The cost per job created in the enterprise zone was estimated to be $67,000, whereas the cost estimate of creating or saving a job in the enterprise board areas was but $13,000.

This analyst believes that there are insurmountable measurement problems in assessing the effectiveness of enterprise zone tax incentive programs, and thus views the Schwarz/Volgy finding with a jaundiced eye. However, given the extreme differentials in estimates of cost per job, their findings can hardly be ignored. Perhaps we have listened too long to those who proclaim we should lift the burden of taxation from the businessman's back, free the corporation, minimize the role of government, and return our individual and collective destiny to the deft and sure fingers of the invisible hand. If Indiana is to reverse its long-term decline in real per capita personal income relative to the rest of the nation, government must increase the more positive role it has recently assumed in industrial policy.

The enterprise zone tool may well be far less cost-effective and more risky than direct government investment in existing enterprises or improvements in infrastructure. There is an abundance of empirical evidence that the level of public nonmilitary capital expenditures strongly influences the net return to private capital. Even Adam Smith argued it was the responsibility of the "sovereign or commonwealth" to provide an adequate structure of public works to "facilitate the commerce of society."

## Evansville

**Maurice Tsai**

*Professor of Economics, University of Evansville*

The Evansville economy will conclude its 1988 performance with a small growth rate, 0.9% in the Evansville Area Business Index (see the **Table**). Industrial production grew slowly this year, at 1.4%, while the trade and service industries maintained their 1987 pace by growing at a 4% rate. The transportation sector became more active than in previous years, showing 3.2% growth. Construction, which reached its peak in 1986, had been leveling off for the past two years. Finally, the financial sector is still attempting to recover from the 1987 setback. Thus, the performance for 1988 has been modest.

During the past several years of slow growth, Evansville's economy invested heavily in its future. Numerous highway and street projects and a new airport have either been completed or will be completed within a year. Many expansion projects in industrial and commercial physical structure also have been undertaken. For a medium-sized city, Evansville is well stocked with medical, recreational, and cultural facilities. These efforts should pay off in the years to come.

The new year will be the beginning of a period of sustained growth for the region. The growth rate in 1989 is projected to be 2.4%, with the manufacturing sector playing a leading role. Based on the projected growth of personal income and improved management-labor relations in the area, manufacturing should be able to expand activities and increase employment further.

The trade and services sectors have

**Table**
**Evansville Area Business Index**
**(1977 = 100)**

| | *Industrial Production* | *Trade & Services* | *Construction* | *Transportation* | *Finance* | *Employment* | *Composite Index* |
|---|---|---|---|---|---|---|---|
| *Quarterly* | | | | | | | |
| 1986:1 | 121.04 | 109.77 | 157.07 | 99.32 | 106.80 | 106.72 | 116.75 |
| 1986:2 | 111.58 | 109.97 | 187.75 | 97.95 | 110.23 | 106.20 | 115.91 |
| 1986:3 | 111.91 | 111.14 | 178.67 | 101.04 | 111.55 | 107.35 | 116.43 |
| 1986:4 | 123.13 | 111.93 | 174.26 | 99.61 | 111.05 | 109.16 | 120.24 |
| 1987:1 | 122.20 | 113.14 | 134.98 | 97.33 | 108.91 | 107.73 | 116.42 |
| 1987:2 | 121.23 | 115.42 | 139.80 | 97.97 | 108.79 | 108.33 | 117.41 |
| 1987:3 | 120.47 | 115.27 | 134.50 | 98.86 | 109.32 | 110.05 | 116.92 |
| 1987:4 | 118.37 | 117.13 | 116.56 | 98.02 | 112.92 | 111.97 | 115.56 |
| 1988:1 | 124.34 | 118.53 | 113.49 | 101.04 | 108.38 | 110.85 | 117.68 |
| 1988:2 | 118.87 | 120.14 | 116.30 | 99.92 | 107.03 | 110.91 | 116.51 |
| Annual | | | | | | | |
| 1985 | 113.42 | 108.87 | 108.70 | 99.16 | 105.29 | 106.82 | 109.44 |
| 1986 | 116.92 | 110.70 | 174.44 | 99.48 | 109.91 | 107.36 | 117.33 |
| 1987 | 120.57 | 115.24 | 131.46 | 98.04 | 109.99 | 109.52 | 116.58 |
| 1988 | 122.20 | 119.86 | 112.04 | 101.16 | 108.36 | 112.67 | 117.59 |
| 1989 | 128.77 | 123.68 | 101.73 | 102.78 | 108.09 | 116.25 | 120.44 |

*1988 figures estimated; 1989 figures projected.*
*Source: School of Business, University of Evansville.*

been the stable and supportive base for the region for years. These sectors will grow at a 3.2% rate next year.

As most major public construction projects have been completed, the construction sector will slow further next year. The 1989 construction index will be about 9% below the 1988 level. Residential construction will remain at the 1988 level unless there is a sharp rise in interest rates.

Transportation is a newly revised sector because of Evansville's better highway network and street system. Air transportation will increase with the new airport facilities. Thus, the growth rate for this sector will be above 2%.

Banking activities in 1989 will be about the same as in 1988. Other financial subsectors need new stimuli for growth, such as the revival of the securities market or a surge in lending activities for housing and automobiles. The savings and loan associations in Evansville are financially healthy.

Regional employment will increase further in 1989. Total employment may rise another 2%, and the unemployment rate will stay at around 5.5%. Thus, the coming year will be better than 1987 and 1988. The prospect of continued better years for 1990 and afterward is quite encouraging.

## Fort Wayne

**Thomas L. Guthrie**

*Associate Professor of Business and Economics and Director, Community Research Institute, Indiana University Purdue University Fort Wayne*

The Fort Wayne area economy in 1988 is destined once again to outpace the remainder of Indiana, the Great Lakes region, and the United States in employment growth. Through October, area[1] payroll employment increased approximately 10,000 to a total of 199,400. The 5.2% increase equals the compounded

annualized growth rate the area economy experienced the previous five years. In contrast, U.S. employment increased 3.5% through October and at a compound annualized rate of 3.2% the previous five years.

Consistent with the national economic outlook for 1989, employment in the Fort Wayne area is forecast to increase 2% to 3%--4,000 to 6,000 jobs--in 1989. To forecast a seventh consecutive year of expansion obviously is done with genuine concern and caution. The area economy's ability to recover quickly from shocks, however imposed, is much greater in the first year than in the seventh.

One concern is with possible supply constraints. Fort Wayne has returned to its customary position of posting unemployment rates 1%-2% below the national average (see the **Figure**). The two metro areas in northeast Indiana (Fort Wayne and Elkhart-Goshen) had the lowest unemployment rates in August of the 10 metro areas in the state not driven primarily by university employment. That an adequate supply of labor will be available in the Fort Wayne area in 1989 rests on the assumption of in-migration, possibly from some other parts of Indiana where job opportunities have lagged.

Between July 1986 and July 1987, the U.S. Census Bureau estimated population to have increased 8,200 in the nine counties comprising northeast Indiana. This constituted 29.3% of the estimated *total increase* in population for the state during that time period. The nine counties have approximately 10% of Indiana's population.

The availability of sufficient plant capacity to support the 1989 forecast also is a concern, but the absence of local data prohibits a quantitative assessment of the potential problem. One possible proxy of need, the dollar value of commercial construction permits issued in Allen County, continued to increase through October. Commercial construction should be a growth industry in 1989.

One caution associated with the area forecast is that it is a high-risk forecast. Consider the U.S. trade deficit and two ways to reduce it:

* Increase exports;

* Drive the economy into a deep recession, causing a massive shrinkage of both imports and exports.

Given the relative ease of exporting products versus services, area economies disproportionately tied to manufacturing will experience boom or bust, depending on which scenario becomes reality. Fort Wayne is such an economy. One out of every three jobs in northeast Indiana is in manufacturing, versus less than one out of every five jobs at the national level. Whether by design or default, northeast Indiana has a high-risk economy. High risk generally leads to either a big reward or a big loss.

1. Adams, Allen, and DeKalb counties.

2. In the 1980s, manufacturing employment in the official Fort Wayne area has decreased. That decrease has been offset largely by increases outside the area but within northeast Indiana.

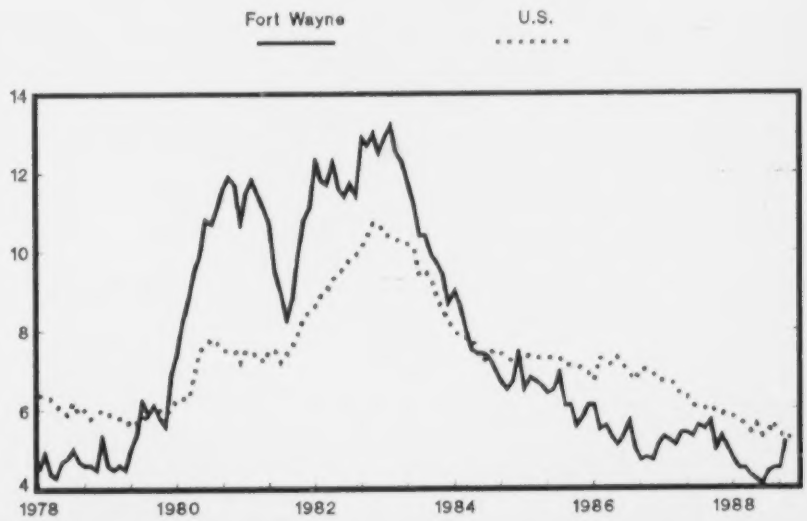
## Columbus

**Patrick M. Rooney**

*Assistant Professor of Economics, Indiana University-Purdue University at Indianapolis, Columbus*

All available data indicate that the local labor market has continued to grow in the last year. The number of employed persons has grown 6% from third quarter

**Figure**
**Unemployment Rate--U.S. and Fort Wayne**



1987 to third quarter 1988 (see the **Table**). The number of unemployed has fallen 7% from the level of a year ago; however, it is up 8% from the second quarter of this year. The unemployment rate has fallen 15%. The number of continued and new unemployment insurance claims have fallen 15% and 11% in the past year. Finally, the number of local help-wanted advertisements grew 34% from this time a year ago and 26% from the second quarter of this year.

The increased demand for local labor is not coming from the housing construction industry, which experienced a 28% decline in the estimated value of permits issued and a 49% decrease in the number of permits issued between third quarter 1987 and third quarter 1988. This dramatic decline *is* somewhat overstated, as the 1987 data include construction of an apartment complex that greatly increased both the value and number of permits issued. Without that project, permits are up 27% and value is up 14%. But the housing construction boom does appear to be slowing down, as both value and number of permits in the third quarter were down more than 20% from the previous quarter.

The local residential real estate market, however, indicates continued strong demand. The average number of days listed for sold properties fell 22% from last year and 9% from the previous quarter. More importantly, the average market price of sold homes increased 26% from a year ago and 18% from the previous quarter. The Housing Affordability Index for Bartholomew County for second quarter 1988, while unchanged from a year earlier, is above average for both the state and the nation. This indicates that households earning the median income in our county can more readily afford to purchase the median-priced home.

Given the large increase in the average price of sold listings, local residents must be spending a disproportionately high share of their incomes on housing; this trend seems to have resulted in a decrease in both new and used car sales. New car registrations are down 23% from the level of a year ago and 13% from the second quarter. Used car registrations are also down, 11% from last year and 10% from the second quarter.

The most recent data demonstrate that Bartholomew County's per capita personal income (PCPI) grew significantly between 1985 and 1986, as well as from 1976 to 1986. The bad news is that it has grown more slowly than the state and national averages during both periods. For example, from 1985 to 1986 the county's PCPI increased 3.6%, but the state's PCPI grew 5.6% and the U.S. PCPI grew 5.2%. From 1976 to 1986 the county's income growth (6.8%) was slightly slower than the state's (7.4%) but noticeably slower than the nation's (8.2%).

This lower growth rate has been caused by the slowdown in wages and salaries in the durable goods industry. From 1976 to 1986, wages and salaries in this sector grew at an average annual rate

**Table**
**Columbus-area Data**

| | *1988:3* | *1988:2* | *Percent Change* | *1987:3* | *Percent Change* |
|---|---|---|---|---|---|
| *Employment Data* | | | | | |
| Number of Persons Employed | 30,900 | 30,300 | 2 | 29,200 | 6 |
| Number of Persons Unemployed | 1,300 | 1,200 | 8 | 1,400 | -7 |
| Unemployment Rate | 4 | 4 | 5 | 5 | -15 |
| Continued Unemployment Insurance Claims | 1,098 | 1,242 | -12 | 1,287 | -15 |
| New Unemployment Insurance Claims | 220 | 199 | 11 | 246 | -11 |
| Help Wanted Advertising (1987 = 100) | 162 | 129 | 26 | 121 | 34 |
| *Utilities* | | | | | |
| Industrial Electricity Sales (millions of kwh) | n/a | 23,081 | | 25,404 | |
| *Housing Construction Data* | | | | | |
| Estimated Value of Permits Issued ($ 000) | 1,783 | 2,402 | -26 | 2,469 | -28 |
| Number of Permits Issued | 28 | 36 | -22 | 55 | -49 |
| Average Value per Permit ($ 000) | 64 | 67 | -4 | 45 | 42 |
| *Sales Data* | | | | | |
| New Car Sales | 463 | 534 | -13 | 602 | -23 |
| Used Car Sales | 2,515 | 2,780 | -10 | 2,817 | -11 |
| *Residential Real Estate Data* | | | | | |
| Number Sold | 231 | 258 | -10 | | |
| Average Days Listed | 105 | 115 | -9 | 134 | -22 |
| Average Market Price | 73,875 | 62,449 | 18 | 58,770 | 26 |

of 5.6% while service industry compensation grew at an annual rate of almost 10%. This differential reflects the loss of market share by U.S. producers to foreign firms, especially in the early 1980s when the dollar was extremely overvalued. The share of total wages and salaries paid by the durable goods industry fell from 58.8% in 1976 to 52.6% in 1986; service compensation grew from 7.3% of the total in 1976 to 10% of the total in 1986.

**The Local Forecast**

After falling at times more than 50% during the last six years, farmland prices have increased 8-9% this year. Coupled with increased prices caused by the summer drought, this will generate a two- to three-year production-led farm recovery--which should benefit the Columbus-area economy, as farmers attempting to replenish diminished inventories will need more inputs such as labor and fertilizer.

The lower value of the dollar and its expected continued fall should present continued growth in local employment opportunities. The more favorable exchange rate makes our goods more competitive both abroad and at home. Furthermore, it encourages foreign producers to invest here, something exemplified by the success of our local economic development efforts. In the last three years, four firms have expanded and 13 new firms have invested in the Columbus area. Of these, 11 are U.S. firms and six are foreign firms. These firms will have invested $124.2 million and created 2,365 new jobs. They have also attracted $1.8 million in state economic development grants to Columbus. These grants are used to establish revolving loan funds, so they will continue to enhance local economic development long after the first projects are completed. Of the 17 companies, 13 are in operation and have created at least 1,765 jobs thus far. The other four are still organizing; approximately 600 new jobs are expected to be created in these companies.

All of this good news is dampened somewhat by the recent uncertainty in the local economy. Local manufacturers continue their efforts to remain cost-competitive in world markets in an era of global competition and in both labor and product markets.

## Kokomo

**Dilip Pendse**

*Associate Professor of Economics, Indiana University at Kokomo*

Kokomo's economy has displayed surprising strength and resiliency since the dark days of 1980-83 when the unemployment rate hovered in the high teens. Today, the economy is lean and healthy. Kokomo's economic landscape is more diverse and stable. The worst is behind it.

The percentage of the working-age population with jobs has risen from 75% in 1980 to 78% in 1988. With the unemployment rate standing at 4.6% in October (the ~~lowest rate~~ in 11 years), the number of unemployed shrank to 1,900, the lowest since 1977. Not only are more people working, but they are working longer hours and earning more. Manufacturing workers, for example, averaged 2.1 hours a week in overtime during the first eight months of 1988, and weekly earnings reached an all-time high of $788 in the first quarter of the year. Today's weekly earnings in manufacturing are double those of ten years ago. With the declining unemployment rate, the number of initial unemployment claims has declined in recent months.

Undoubtedly the sector making the economy hum is manufacturing. But Kokomo's economy has gone through an immense restructuring in the last ten years. Manufacturing employment is around 18,500 now, down 5,500 from the 1977 peak. This loss has resulted mostly from closing older plants and trimming the work force. Few manufacturing jobs have been created from the opening of new plants or expansions of existing ones. The contribution of manufacturing to total employment has fallen from 60% in 1977 to 54% now.

The bulk of new jobs created in the economy has come from outside manufacturing, particularly the service and retail trade sectors. Consequently, the small business sector (firms employing fewer than 100 people) has become a powerful force in Kokomo. The number of service-sector jobs has swelled from 3,500 in 1976 to 7,200 today. The number of jobs in health services totaled 2,300 in August, making it the area's largest service industry. The number of health services jobs has grown by 38% since 1981. The retail trade sector's jobs have also increased significantly, from 6,400 in 1982 to 9,300 today.

A shift away from excessive dependence on manufacturing jobs implies many things. Since the service sector is usually less sensitive to recessions, Kokomo's economy is likely to be less vulnerable to economic downswings. Fluctuations in jobs will be less wild than in the past because of the trend away from the dominance of manufacturing. Additionally, women and older citizens will likely benefit from the restructuring of the job market because the retail and service sectors usually hire them in large numbers. Of course, historically the average compensation of workers in the non-manufacturing sectors has been 30% to

40% below that of manufacturing workers. It suggests that the total earnings of all employed will inch upward at a slower pace than in the past.

During the first eight months of 1988 the economy lost 338 manufacturing jobs, compared with a loss of nearly 1,000 jobs during the same period a year earlier. However, the economy created 1,140 jobs in nonmanufacturing sectors, nearly 35% of those in retail trade and 26% in services. Unlike in 1987, Howard County's unemployment rate remained below the state average for five of the first ten months of 1988.

For the fourth successive year, Kokomo's median household spendable income was the highest in the state ($28,476 in 1987). Again for the fourth straight year, the percentage of households in Kokomo earning more than $50,000 a year in spendable income was the highest among the 12 metropolitan areas in the state. However, according to *Sales and Marketing Management*, Kokomo's national ranking based on median household spendable income slid from 55th in 1986 to 78th in 1987.

Also according to *Sales and Marketing Management*, retail businesses in Kokomo rang up sales of $776.1 million in 1987, up 72% since 1980. Kokomo is among the top 55 MSAs in the country, with retail sales per household in excess of $20,000. Since 1980 Kokomo has moved up 122 places in that category.

### Housing

Housing also remained moderately healthy during the first nine months of 1988. The number of existing houses resold during the first three quarters increased 7% over those sold in the same period in 1987. At this rate, sales of existing homes could exceed 1,300 by the end of the year. Along with rising home sales, home prices continuously rose during the period; the median price of an existing house was 3% higher than in 1987. Home affordability is not a serious problem, however, since the Center for Real Estate Studies at Indiana University lists Kokomo's affordability index as among the highest in the state's 19 regions.

In general, the music of hammer, drill, and ripsaw was a little softer than it was a year ago. The number of building permits issued in the first three quarters of 1988 was 4% below that of 1987. Home owners spent $2 million on home improvements and home repairs during the same period as compared with $1.1 million. Residents indulged more in building porches, patios, swimming pools, gazebos, and wooden decks than in garages, room additions, and sheds.

Business investment in new offices, parking lots, warehouses, and other structures remained strong during the first nine months of the year, as 40 permits valued at $13.5 million were issued. In 1987's first three quarters, 32 permits valued at $2.2 million were issued.

New home permits eased just a bit during the same period, and multiunit housing construction sagged considerably. Eight multiunit housing permits valued at $1.3 million were issued in January-September 1988, compared with 13 permits valued at $2.6 million in 1987's first nine months.

### Agriculture

Various quarterly surveys of agricultural bankers conducted by the Federal Reserve Bank of Chicago show that good farmland is rising in value. The agricultural bankers in the Kokomo area have reported strong gains--an almost 14% increase over last year's values. Also, the pace of farm real estate transactions has quickened in recent months, according to these surveys.

Nearly 70% of the farmers in Howard and Tipton counties may qualify for drought relief. But the checks will arrive only after verification of losses.

### Other Positive Developments

Kokomo's misery index remained around 10 for the fifth year in a row, thanks to a low inflation rate and a low unemployment rate. In 1980, the index topped 29. Thus, Kokomo has reduced discomfort (or suffering) substantially for its population, at least according to this measure.

In its Fall 1988 issue, *Money* rated Union Bank (Kokomo's largest and oldest) among the six safest banks in the state and among the 175 safest banks in 41 states. In the first week of November, the Beach Boys' single "Kokomo" rose to the top of the *Billboard* charts. More than half a million copies of the single have been sold thus far. In the same month, the city was again thrown into the national spotlight when Transamerica Commercial Finance, a Chicago-based insurance firm, featured Kokomo in its advertising spots on CBS radio stations and in such weekly magazines as *Time*, *Newsweek*, and *U.S. News and World Report*. Whether these and other national exposures will bring jobs to Kokomo is anybody's guess.

In May, DuPont Tau Laboratories changed its name to DuPont Photomasks Inc., tying DuPont's other photomask facilities in with Kokomo. Former Continental Steel employees began receiving pension and other settlement checks. And in the first week of November, Governor Orr announced that Kokomo's Delco Electronics was one of the six Indiana companies selected to supply parts to Lafayette's Subaru-Isuzu plant.

**The Bad News**

Not all the news in 1988 was positive. Despite a "Hands Around Accurate Parts" rally in July that attracted more than 200 people, Accurate Parts' parent, Echlin Corporation, decided to shut the 64-year-old operation down permanently by year's end, wiping out 180 jobs. The machinery from the local plant will be moved to Echlin's operations in the South.

The future of 87-year-old Kingston Products, a manufacturer of parts for trucks, buses, and boats with a total employment of 120, is still in the air. Its management has sent signals strongly indicating a desire to move the operation to the South.

According to a study conducted by the Census Bureau and the I.U. School of Business, Howard County is one of 38 in the state that has lost population since 1980. The county has lost 2,496 people in this decade.

One casualty of the declines in population and manufacturing jobs has been public school enrollment. This figure declined by 366 in Howard County in 1988, the seventh consecutive decline.

The effect of the summer's drought showed up at the check-out stands in local grocery stores. The total cost of 15 regularly monitored grocery items rose 11% from March to October; during the same period of 1987 the total cost had actually declined 0.3%.

**The Outlook**

The long-term outlook for the economy looks promising. Kokomo is now in the "auto alley" running through Lafayette. This will certainly create some jobs in the future. It would not jolt the economy, but it would at least be a shot in the arm. There is also a possibility that a manufacturer of machines and support items for circuit boards will locate its operation here. Kokomo's future employers will be of the high-tech, low-pollution type, not the smokestack type.

For the near term, although it is too early to whisper the word "recession," it is time to utter the word "slowdown." Kokomo's economy is currently operating in the full-employment zone. Further improvement is hard to come by. The manufacturing sector will keep chugging, but at a slower pace. Manufacturing employment should decline further, but not by a large number. Some short-term layoffs may occur in the latter half of the year. Overall, the unemployment rate should remain around 6.5%. Retail trade employment will grow by 200-300 jobs. The service sector should post modest gains. The scope for further growth in new-home construction and home improvement is limited, and the real estate market will remain soft. Prices of existing homes will not likely post strong gains next year.

Although some troubling signs have emerged in the past and will keep creeping up from time to time, the worst is behind now. Because of the growing importance of the nonmanufacturing sector, even if a recession occurs in late 1989 the fallout will not be as great as it was in previous recessions.

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# Indiana Business Review

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Nina Ardery, Chris Chevannes, Morton J. Marcus, and Christopher Spoerl — **Does Indiana Get Its "Fair Share" of Federal Funds?**

Ronald C. Prevost and Jerome N. McKibben II — **The Effect of Population Statistics on Federal Funds Distribution**

## in this issue...

In most modern nations, regionalism is an issue. The Soviet Union, Brazil, Yugoslavia, Austria, and Australia all have regional conflicts. One form of that discord is a debate about the equitable distribution of resources from the central authority to the various parts of the nation.

In this country, we have sustained regional disputes for more than 200 years. Today the conflict takes the form of semi-commercial warfare: competition for federal contracts, installations, and investments.

Indiana has been concerned about getting its fair share of federal funds after an internal conflict about the propriety of such distributions. Now that we have accepted the legitimacy of accepting monies from Washington, we fret that we do not get "our fair share". This issue offers some numbers and observations for that discussion.

One important determinant of how such funds are distributed is the population of an area. Ron Prevost and Jerry McKibben detail the federal programs that depend on population data. With the 1990 Census of Population just around the corner, this article emphasizes the importance of each person being counted so that his or her home area can share appropriately in the distribution of federal funds. Those who are not counted deny themselves and their neighbors the benefits of funds for a decade. This sobering article gives new meaning to the line, "Here's looking at you, kid."

mjm

# Does Indiana Get its "Fair Share" of Federal Funds?

**Nina Ardery, Chris Chevannes, Morton J. Marcus, and Christopher Spoerl**

*Morton J. Marcus is Director of the Indiana Business Research Center, Indiana University Graduate School of Business, where Nina Ardery, Chris Chevannes, and Christopher Spoerl are Graduate Assistants.* *The authors wish to express their appreciation to Richard L. Pfister of the Indiana Business Research Center and Charles Sim of the Indiana Department of Commerce for guidance and suggestions.*

The federal government distributed more than $847 billion to the 50 states and U.S. territories in 1987. These funds came through grants, salaries, direct payments, procurement contracts, and other programs. That year, Indiana received more than $14 billion—1.73% of the U.S. total. Did Indiana receive its "fair share"? What *is* its "fair share" of federal funds?

Federal distributions are made on many different terms. Some are determined by the income level of an area as an attempt is made to redistribute the nation's riches from the wealthier to the poorer regions. To get more of this money, Indiana would have to become poorer.

Other funds are distributed on the basis of competitive bidding; contracts are awarded to the firms offering the best product for the best price. To get more of this money, Indiana businesses would have to sell what the government wants to buy and then beat similar firms from other states.

Federal payrolls go into areas with federal employees. To get these dollars, Indiana would need to host larger federal facilities.

Other programs are based on the presence of particular populations. More federal funds would come to Indiana if we had more older citizens who qualified for federal pensions or assistance, or if we had more members of special populations, such as American Indians.

Clearly we can take certain steps if we determine that we should "sell" to the federal government. Hoosier businesses could become better informed about federal procurement opportunities. Private or state lands and buildings could be donated to the federal government for offices, research centers, storage facilities, disposal sites, or other purposes.

For many years Hoosiers have berated their senators and congressmen for not bringing home enough of these desirable federal funds. The feeling is that we send our representatives to Washington to bring home the bacon, not support national objectives. Our fair share, it is often believed, would be a return of no less than $1 for every $1 sent to Washington. This approach is contrary to the concept of a national purpose for federal spending.

Alternatively, it could be argued that Indiana should get no less than the average amount per person distributed by the federal government. If Indiana has 2% of the population of the nation, we should get 2% of the money. After all, a person is a person and all should be treated equally by the federal government.

We cannot pretend to resolve this political (almost metaphysical) question. In conducting this study, we have addressed two *arbitrary* but frequently accepted definitions of fairness:

- The Per Capita method, based on federal expenditures determined by population alone; and
- The Average Recovery method, based on the assumption that all states should receive federal funding in direct proportion to their tax payments to the federal government.

These methods do not attempt to assess the necessity or worthiness of the federal program by national

**Table 1**
**Total U.S. and Indiana Federal Funding by Category**

| *Department or Program* | *Total U.S. Funds Distributed ($1000)* | *% of Total Distribution* | *Actual Indiana Receipts ($1000)* | *% of Total Receipts* |
|---|---|---|---|---|
| Agriculture | 10,730,955 | 1.3 | 181,699 | 1.2 |
| Education | 8,692,638 | 1.0 | 175,004 | 1.2 |
| H.H.S | 47,508,636 | 5.6 | 874,180 | 6.0 |
| H.U.D. | 10,862,372 | 1.3 | 172,399 | 1.2 |
| Interior | 1,305,408 | 0.2 | 12,682 | 0.1 |
| Transportation | 17,056,051 | 2.0 | 306,153 | 2.1 |
| Salaries and Wages | | | | |
| Defense | 65,097,948 | 7.7 | 722,475 | 4.9 |
| Postal Service | 27,228,842 | 3.2 | 518,431 | 3.5 |
| Other Federal Wages | 34,527,160 | 4.1 | 296,390 | 2.0 |
| Non-Ag Direct Payments | | | | |
| Social Security | 202,201,463 | 23.8 | 4,984,845 | 33.9 |
| Medicare | 79,826,714 | 9.4 | 1,537,776 | 10.5 |
| Federal Retirement | 45,057,195 | 5.3 | 494,426 | 3.4 |
| Other Direct Payments | 56,851,277 | 7.8 | 1,171,305 | 8.0 |
| Procurement | 196,325,124 | 23.1 | 2,402,415 | 16.4 |
| Grants | 7,825,063 | 0.9 | 106,693 | 0.7 |
| Direct Ag Payments | 16,217,973 | 1.9 | 474,494 | 3.2 |
| Other | 11,806,403 | 1.4 | 259,754 | 1.8 |
| Total | 839,121,222 | 100.0 | 14,691,121 | 100.0 |

standards, nor the degree to which the program is "deserved" by the recipient community. The methods are similar in assumptions used and ends obtained, but the means to those ends are quite different. Both methods indicate deficit figures for the state of Indiana.

We considered 161 federal programs using data from *Federal Expenditures by State for Fiscal Year 1987*. **Table 1** presents major categories of funding, dollars distributed by the federal government and dollars received by Indiana in each category, and percentage of total represented by each category. For example, in the "Grants" category, the government distributed more than $7 billion in 1987, including expenditures for the National Science Foundation, ACTION, NASA research, and other programs. This $7 billion was 0.9% of the total funds spent. Indiana received about $106 million of that money, which was 0.7% of the "Grants" total. The category "Other" includes the Departments of Commerce, Energy, Justice, and Labor, as well as the EPA, EEOC, and many other programs. **Figure 1** shows the percentages spent and received in the three largest categories.

Studies of the difference between a state's actual portion of the federal pie and its "fair" share often stop at calculating the difference between the amount the state "should have re-

**Figure 1**
**Major Categories of Federal Funding**
**(U.S. and Indiana, Percent of Total Funding)**

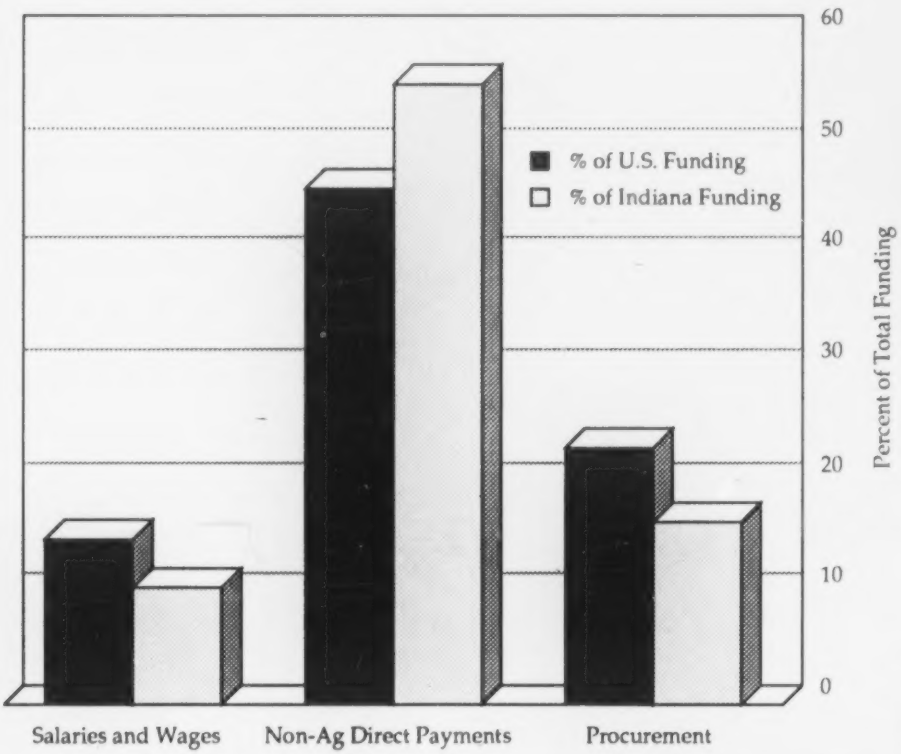
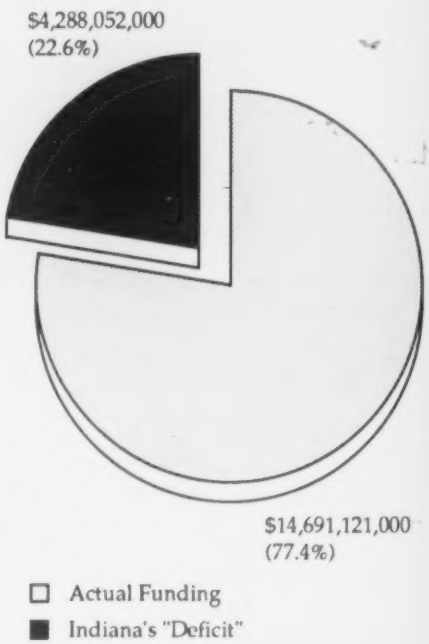



**Figure 2**
**Indiana's Potential Pie**




ceived" under the presumed "fair" allocation formula and the amount it actually received. We have gone a step further to calculate the full economic impact of that shortfall by use of multipliers developed by the U.S. Department of Commerce. We estimate the reduction of output, income, and employment suffered by Indiana because Congress and the federal bureaucracy have their own conceptions of a proper allocation of federal resources or because Indiana does not have what the federal government is buying.

The Regional Input-Output Modeling System (RIMS II) (*Regional Multipliers...* 1986) was used to estimate the impact of program expenditures on the Indiana economy. RIMS II multipliers for output, earnings, and employment capture regional (in this case, the state of Indiana) relationships among industries and households. An extra dollar of federal spending in Indiana supports additional economic activity in the state; just how much activity depends on the recipient of the funds. For this reason, the RIMS multipliers are put into 39 industry categories.

The division of the 161 federal funding categories into RIMS industries was a detailed yet judgmental process. For example, it was easy to assign programs in the Department of Transportation to the RIMS Transportation category. Other programs were not as easy to classify. An attempt was made to err on the side of conservatism in these cases. In other words, effects on output, earnings, and employment could have been higher or lower if different multipliers had been assigned; we chose the category with the least impact.

### Per Capita Method

In the per capita method, Indiana's fair share of federal funds for each federal spending program was determined by finding Indiana's estimated percentage of the U.S. population in 1987 (2.2396%) and multiplying by total federal expen-

**Table 2**
**1987 Federal Funds Distribution to Indiana and the Impact of Expenditures Per Capita Method**

| *Department* | *Actual Indiana Receipts*[1] | *Indiana Funding at 2.24% of U.S.*[1, 2] | *Indiana Gain (Deficit)*[1] | *Output Gain (Loss)*[1] | *Earnings Gain (Loss)*[1] | *Jobs Gain (Loss)* |
|---|---|---|---|---|---|---|
| Agriculture | 181,699 | 240,326 | (58,627) | (92,929) | (38,594) | (2,487) |
| Education | 175,004 | 194,677 | (19,673) | (42,277) | (17,839) | (1,011) |
| H.H.S | 874,180 | 1,063,985 | (189,805) | (286,587) | (100,957) | (6,513) |
| H.U.D. | 172,399 | 243,269 | (70,870) | (149,774) | (53,898) | (3,016) |
| Interior | 12,682 | 29,235 | (16,553) | (27,883) | (7,637) | (520) |
| Transportation | 306,153 | 381,981 | (75,828) | (165,228) | (62,755) | (3,306) |
| Salaries and Wages | | | | | | |
| Defense | 722,475 | 1,457,909 | (735,434) | (881,638) | (256,960) | (19,121) |
| Postal Service | 518,431 | 609,807 | (91,376) | (109,541) | (31,927) | (2,376) |
| Other Federal Wages | 296,390 | 773,257 | (476,867) | (571,668) | (166,617) | (12,399) |
| Non-Ag Direct Payments | | | | | | |
| Social Security | 4,984,845 | 4,528,426 | 456,419 | 547,155 | 159,473 | 11,867 |
| Medicare | 1,537,776 | 1,787,768 | (249,992) | (299,690) | (87,347) | (6,500) |
| Federal Retirement | 494,426 | 1,009,084 | (514,658) | (616,971) | (179,821) | (13,381) |
| Direct Payments | 1,171,305 | 1,475,713 | (304,408) | (433,957) | (128,382) | (8,550) |
| Procurement | 2,402,415 | 4,396,822 | (1,994,407) | (4,483,227) | (1,294,370) | (74,591) |
| Grants | 106,693 | 175,247 | (68,554) | (147,364) | (61,573) | (3,533) |
| Direct Ag Payments | 474,494 | 363,211 | 111,283 | 255,805 | 63,542 | 6,888 |
| Other | 259,754 | 264,412 | (4,658) | 2,837 | (7,178) | (598) |
| Total | 14,691,121 | 18,995,129 | (4,304,007) | (7,502,937) | (2,272,842) | (139,146) |
| Per Capita Output Loss | $1,357 | | | | | |
| Per Capita Earnings Loss | $411 | | | | | |
| Employment Loss (# Jobs) | 139,146 | | | | | |

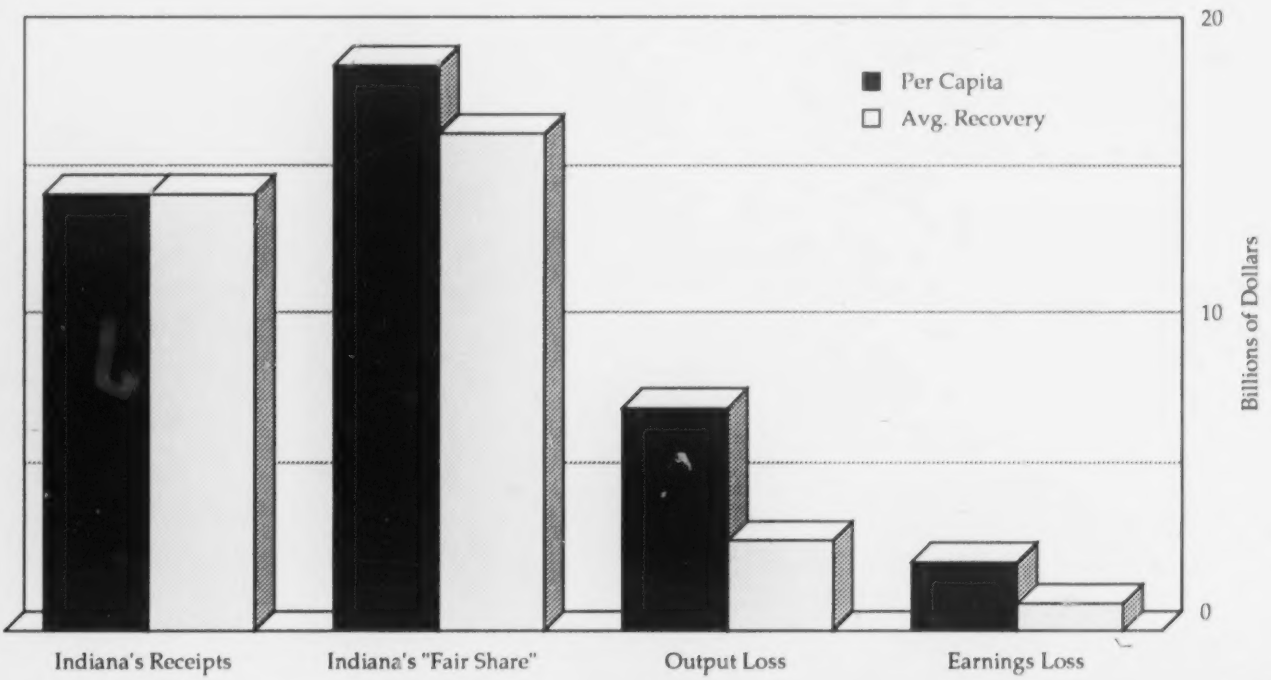
*1. In $1,000.*
*2. Indiana represented 2.24% of the total U.S. 1987 population.*

ditures in each category. Subtracting actual receipts from this proportionate level gave the surplus or deficit funding for each program. The RIMS multipliers for output, earnings, and employment were applied to the surpluses and deficits and the results were summed.

If Indiana had received federal funds in proportion to its population, the following would have occurred:

- The total output of the state would have been about $7.5 billion higher. This is equal to an increase in the state's total output of $1,357 per capita;
- Earnings would have been $2.3 billion (4.2% or $411 per capita) higher;

Figure 3
Indiana Federal Funding, 1987




• 1987 employment would have been about 140,000 (5.4%) higher.

**Figure 2** represents Indiana's 1987 federal funding "pie." Indiana received more than $14 billion. The second slice, representing more than $4 billion, shows how big the pie would have been had Indiana received proportionate per capita funding.

**Average Recovery Method**

The 50 states averaged a recovery of $93.64 for every $100 sent to Washington in fiscal 1987. Indiana achieved only $82.54. If Indiana had attained the national average, how much more money would have been circulating in the state with what employment consequences?

If Indiana had the average recovery of federal funds, almost $2 billion more federal dollars would have flowed into the state. To estimate the impact of those "missing" federal funds on the state's economy, it was assumed that the mix of programs would not have been altered. In other words, it was assumed that the $2 billion would be spent for the same programs and in the same proportions as the $14 billion actually received. The $2 billion deficit was applied to programs of federal funding by finding the percentage of funding that each category represented for the state and multiplying by the deficit. RIMS multipliers were then applied to the resulting surpluses and deficits.

**Tables 2** and **3** show funding and losses by category. For example, in transportation, Indiana received $306 million; it would have taken in an extra $41 million in this category if the state had received the national average recovery of taxes. RIMS multipliers for the transportation industry were applied to the $41 million to arrive at the results in Table 3.

**Figure 3** summarizes losses for both methods. With this method, the following can be seen:

• The output loss was about $3 billion ($546 per capita);

• The earnings loss was about $900 million ($166 per capita); and

• The employment loss was about 62,000 jobs.

Because detailed information about subcontracting of federal contracts

**Table 3**
**1987 Federal Funds Distribution to Indiana and the Impact of Expenditures**

**Average Recovery Method**

| *Department* | *Actual Indiana Receipts*[1] | *Indiana Gain (Deficit)*[1] | *Output Gain (Loss)*[1] | *Earnings Gain (Loss)*[1] | *Jobs Gain (Loss)* |
|---|---|---|---|---|---|
| Agriculture | 181,699 | (24,436) | (46,774) | (14,645) | (1,097) |
| Education | 175,004 | (23,536) | (50,578) | (21,342) | (1,210) |
| H.H.S | 874,180 | (117,566) | (233,535) | (95,396) | (5,532) |
| H.U.D. | 172,399 | (23,186) | (47,797) | (16,588) | (921) |
| Interior | 12,682 | (1,706) | (3,580) | (972) | (74) |
| Transportation | 306,153 | (41,174) | (89,717) | (34,075) | (1,795) |
| Salaries and Wages | | | | | |
| Defense | 722,475 | (97,164) | (116,480) | (33,949) | (2,526) |
| Postal Service | 518,431 | (69,723) | (83,583) | (24,361) | (1,813) |
| Other Federal Wages | 296,390 | (39,861) | (47,785) | (13,927) | (1,036) |
| Non-Ag Direct Payments | | | | | |
| Social Security | 4,984,845 | (670,400) | (803,671) | (234,236) | (17,430) |
| Medicare | 153,7776 | (206,812) | (247,925) | (72,260) | (5,377) |
| Federal Retirement | 494,426 | (66,494) | (79,713) | (23,233) | (1,729) |
| Direct Payments | 1,171,305 | (157,526) | (196,248) | (56,213) | (4,081) |
| Procurement | 2,402,415 | (323,095) | (726,281) | (209,688) | (12,084) |
| Grants | 106,693 | (14,349) | (31,217) | (11,842) | (731) |
| Direct Ag Payments | 474,494 | (63,814) | (146,687) | (36,437) | (3,950) |
| Other | 259,754 | (34,934) | (69,689) | (21,256) | (1,173) |
| Total | 14,691,121 | (1,975,775) | (3,021,259) | (920,420) | (62,559) |

| | |
|---|---|
| Per Capita Output Loss | $546 |
| Per Capita Earnings Loss | $166 |
| Employment Loss (# Jobs) | 62,559 |

*1. In $1,000.*

awarded in Indiana and other states was not available, we assumed that the effect of subcontracts awarded from Indiana to firms outside the state was balanced by those contracts awarded to Indiana firms from outside. Similarly, we assumed that surplus or deficit funds would be applied exclusively to the Indiana economy.

Under either of these methods Indiana comes up short. Whether the state is short by 62,000 or 140,000 jobs is not the specific issue. The questions are: what *can* be done about it? and *should* anything be done about it?

To the extent that Indiana business could participate more in federal activities (procurement is 23.1% of all federal spending), the state should encourage Hoosier firms to seek a greater share of this market. Just as export markets are sources of trade, so is the federal government a source of trade for Indiana businesses.

Are there impediments to increased participation by Hoosier firms in the federal market? Is there a lack of knowledge about federal opportunities? Do Hoosier firms have products and services suitable for federal contracts, or do we need to cultivate firms with greater federal appeal? There would hardly seem to be a language or cultural barrier operative here.

Are Indiana governments seeking federal funding for their programs? Is there a tendency for our bureaucrats to avoid the complexities of involvement with the federal bureaucrats? Are our elected and appointed public servants ignorant of federal programs, or do they demur from participation in such efforts on philosophical grounds? Do we use all the federal funds allocated to us annually under current formulas?

Perhaps before we claim "foul," we need to examine our behavior to see if we can correct our "deficit" by our own actions without attempting to change federal priorities. This study indicates that there is much to be gained from a closer examination of our opportunities with America's largest business customer and public benefactor. ❐

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*Federal Expenditures by State for Fiscal Year 1987* (Washington, D.C.: U.S. Bureau of the Census, 1988).

*Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System* (Washington, D.C.: Bureau of Economic Analysis, May 1986).

# The Effect of Population Statistics on Federal Funds Distribution

**Ronald C. Prevost and Jerome N. McKibben**

*Ronald C. Prevost is a Regional Analyst in the Population Division of the U.S. Bureau of the Census. Jerome N. McKibben is Chief Demographer at the Indiana Business Research Center, Indiana University Graduate School of Business.* *This paper was presented at the National Conference on Applied Demography, Bowling Green, Ohio, September 29-October 1, 1988. The views expressed are attributable to the authors and do not necessarily represent the views of the U.S. Bureau of the Census. The helpful comments and assistance of Jeffrey Passel, Michael Roof, Douglas Sater, Donald E. Starsinic, Barbara van der Vate, and Grace Waibel are gratefully appreciated.*

Population statistics have a wide variety of applications in both the public and private sectors. Frequently they are given a great deal of attention by policymakers. The characteristics of our nation and its population, unemployment rate, poverty rate and income statistics are important indicators of the direction and magnitude of demographic change. With the 1990 census less than a year away, there is a heightened consciousness of the use and impact of population and housing statistics.

## Background

The U.S. Bureau of the Census is mandated by the Constitution to enumerate the national population every 10 years for the sole purpose of determining adequate state representation in the House of Representatives. However, the statistics produced through and based upon this endeavor are also critical to the development and management of the federal budget. The uniform use of the most current population statistics for determining eligibility requirements and resource allocation in federal programs is imperative for the fair distribution of funds. In 1978, the U.S. Office of Management and Budget outlined this view in Volume 43, Number 87 of the Federal Register with their office Directive No. 13:

> . . . [T]he term current data means the most recent complete national series as published by the Bureau of the Census in Current Population Reports, P-25, P-26, or related series, except where data from a decennial census conducted by the Bureau of the Census is more current.

This directive also stipulated that in the administration of programs that are based on total population, statistics used for each class of eligible government be based in the same methodological context. This condition added assurance that each level of government was treated fairly and appropriately.

Grants are revenue allotments and allocations to state and local governments. For the most part, grant programs do not include shared revenues, payments in lieu of taxes, loans or insurance programs, payment for contracted services to state and local governments, or direct payments to individuals (Committee on the Post Office and Civil Service, U.S. House of Representatives, 1975). Many grant programs require the recipient to share a portion of the program's costs. The disbursal of resources occurs through one of two methods, formula or discretionary allocations.

## Formula Allocations

Formula grants apportion and allocate funds through factors mandated by statutes or administrative regulations. The formulas vary from program to program to satisfy the intent of the specific program. Generally, the formulas are employed to ascertain what constitutes a fair share of revenue allotment for a state or local government.

Formula grants can be apportioned either through strict allocation per capita or through competitive criteria. Per capita apportionment provides a fixed amount of revenue per eligible person. On the other hand, competitive distribution utilizes criteria by which subnational areas have competing proportions of the total number of eligible persons. A loss of grant appropriations in one specific geographic area means a gain in some other area, although some programs provide a minimum allotment to states regardless of the amounts determined by formula. Formula grants use threshold or eligibility criteria to determine whether an area qualifies to participate in the program (Passel and Robinson, 1984). One example of this requirement is the Community Development Block Grants/Entitlement Grants Program, in which one criterion of eligibility is whether a local government is located in a metropolitan statistical area.

## Discretionary Allocations

In some grant programs, requirements such as total population of subnational areas are used to meet eligibility requirements but are not used in revenue allocation. Such programs are discretionary grants, which distribute resources on the basis of the relative merit of competing applications for assistance. In this type of program, resources are allocated at the discretion of the program's administrators. In some programs, relative priorities may be assigned on the basis of population or population characteristics via a particular formula.

The growth of federal assistance to subnational areas has increased substantially throughout the twentieth century. The growth in both the number of programs and money distributed has increased most dramatically since 1950. In that year, federal grants to subnational areas totaled $2 billion. The total expanded to $7 billion by 1960 and to $56 billion in 1976 (Committee on the Post Office and Civil Service, U.S. House of Representatives, 1975). In fiscal year 1986 $112 billion were allocated. The figure dropped to $107 billion in fiscal year 1987. This figure excludes funds allotted but not disbursed, amounting to $1 billion. In 1987, federal grants constituted an allocation of approximately $438 per capita[1] (U.S. Bureau of the Census, 1988).

### Current Data

Estimates of a population and its characteristics, such as per capita income, the poverty rate, and the unemployment rate, are frequently used in eligibility or allocation formulas of federal grant programs. These statistics provide reliable, current information on a regular schedule. They are more representative of present circumstances than data from the last decennial census, at least to the extent that they can be prepared for the geographic levels required by the program. These statistics alert decision makers to various needs and help them distribute resources to areas whose requirements for assistance have changed since the last census. Current population statistics are particularly important in years when the federal budget is constricted.

Estimates of a population and its characteristics are not devoid of error. The amount of undercounting in a census, which is usually an estimate's benchmark year, and estimation error caused by data and methodological constraints are difficult to measure. Estimates have the potential to exhibit a higher degree of error than census statistics because of the compounding effects of census undercount, the quality of the data derived from administrative sources, the limitations of specific estimation methodologies, and sampling and non-sampling errors. Errors are inherent in any statistics, and because of this it is important to minimize their effect by using a consistent methodology and developing a single consistent set of data products. For these reasons, the U.S. Bureau of the Census instituted the Federal-State Cooperative Program for Population Estimates (FSCPE). In this program, state-sponsored agencies play a vital role in the production of population statistics. The program was a joint federal-state initiative in 1967 developed to provide consistent noncompeting data products, solicit state insights, improve estimates, and jointly publish population estimates acceptable to both federal and participating state governments.

The most publicized federal program that distributed population-based federal funds was the now-defunct Federal General Revenue Sharing Programs (GRS). At its peak, revenue sharing directly distributed nearly $5 billion annually to states, counties, cities, and minor civil divisions. When the program concluded in 1986, it was popularly believed that the need for current population estimates was highly diminished. This opinion was based in part on the visibility of GRS, its inclusion of all functioning governmental units in funds distribution, and because the remaining programs did not automatically distribute federal funds to the state and local governments by population share. They instead provided allotments, mainly at the state level, that were available once the regulations and requirements under the program were met (U.S. General Accounting Office, 1987). Consequently, many administrators who previously applied GRS revenue to subsidize their local police, fire, and highway departments had a decreased awareness of the effects of population statistics on grant programs.

### Methodology

Federal revenues and the formulas by which they are disbursed through grant programs are in a constant state of flux; programs are periodically merged with others or are phased in and out of the federal budget depending upon need as determined by Congress. The intent here is to provide a snapshot of the magnitude of revenue allocation to state and local governments by grants that base revenue disbursal on population criteria as specified by formulas. Also of particular interest is the relative impact that various types of population statistics have on revenue disbursal. The various grant programs have been categorized according to the type of population statistics that they employ. Three program types have been delineated: programs directly driven by population estimates, programs indirectly driven by population estimates, and programs that are driven by other census population statistics.

Directly driven programs use population estimates in their revenue allocation formulas. An example is the State Energy Conservation Program (U.S. Department of Energy, FCDA program number 81.041), in which a state's share of the U.S. population accounts for 40% of the formula by which funds are distributed.

Indirectly driven programs employ statistics that use population estimates in either the numerator or denominator of the equation by which the statistics are developed. Also included in this

genre are current survey data of the U.S. Bureau of the Census, which use population estimates as control totals. Examples of indirectly driven programs are Child Welfare Service-State Grants (FCDA program number 13.645), in which state per capita income accounts for 50% of the allocation formula, and Housing for the Elderly and Handicapped (FCDA program number 14.157), in which 100% of the allocation formula consists of statistics from the Survey of Income and Education conducted by the U.S. Bureau of Census.

*In fiscal year 1988, the federal government will distribute through formula grants based all or in part upon population $73 billion. Of this amount, $40 billion is expected to be allocated according to population variables.*

Programs driven by census population statistics generally employ statistics that are not updated until the next census. An example of a program employing these statistics is Payments to Agricultural Experimental Stations (FCDA program number 10.203), in which 26% of its allocation formula is represented by a state's share of total U.S. rural population.

To determine if formula grant programs met the criteria of this study, the Federal Catalog of Domestic Assistance was used as the sole source of information on total program expenditures for fiscal years 1987 and 1988. It is important to note that the figures used for expenditures in fiscal year 1988 are only estimates. In most cases, the exact formula requirements of the program and source of statistics that drove the formula were documented in the FCDA. In some instances, it was necessary to contact a government agency to clarify information.

The portions of total grant expenditures disbursed by population variables were calculated by multiplying the proportion of the formula for which population was responsible times the total revenue allocation. Some programs were partially driven by a combination of the above categories. Where this occurred, expenditures were separated to the appropriate categories by the proportionate effect of each indicator in the formula. The overall impact of the specific indicators could thus be examined. Finally, this research does not include programs that use population and related statistics exclusively as eligibility criteria.

## Results

We identified 60 programs that in fiscal year 1987 relied all or in part on population or population characteristics for the distribution of $69 billion, or $281 per capita in federal money. Estimates of the population and its characteristics affect the allocation of $38 billion in federal grants, $153 per capita. This allocation amounts to 55% of total revenue disbursal under these programs. In fiscal year 1987, the major user of estimates of population and its characteristics in both the number of programs (15) and amount of allocations based on population variables ($19 billion) was the U.S. Department of Health and Human Services.

In fiscal year 1988, the federal government will distribute through formula grants based all or in part upon population $73 billion. Of this amount, $40 billion is expected to be allocated according to population variables.

When the Federal General Revenue Sharing Program concluded, many people were concerned with declining resource appropriations to subnational areas. However, this program was relatively minor considering the scope of federal assistance. The largest grant--by far--is the Medicaid Assistance Program (Medicaid Title XIX, FCDA number 13.714), which uses per capita income to allocate 50% of its revenue. The total disbursements to states by this grant alone ($28 billion in fiscal year 1987) account for almost 40% of total formula grant revenues driven by population estimates and characteristics. The second largest grant is Highway Planning and Construction (FCDA number 20.205) which allocates 50% of its revenue by state share of U.S. population. The revenue allocations for this grant ($13 billion in fiscal year 1987) account for another 19% of the total. The remaining programs vary in the magnitude of their expenditures and are exhibited in the **Appendix**.[2]

*When the Federal General Revenue Sharing Program concluded, many people were concerned with declining resource appropriations to subnational areas. However, this program was relatively minor considering the scope of federal assistance.*

Some of the grant programs that utilize census variables (such as rural population or population of urbanized areas) in their allocation formulas rely on statistics that are not updated in post-censal years for the required levels of geography. Also, some of the

programs that rely on state-specific characteristics of persons living in poverty use information from the decennial census rather than from the Current Population Survey. We identified a total of 14 grant programs that utilized census statistics in their grant formulas. In fiscal year 1987, population variables from the 1980 census accounted for $6 billion of the $38 billion in total allocations driven by population variables. In fiscal year 1988, census variables accounted for 15.2% or $6 billion of the estimated $40 billion dollars in total allocations driven by population variables.

*In fiscal year 1987, statistics that used population estimates in their calculation accounted for $17 billion or 44.5% of the total allocations driven by population variables.*

Of the 60 programs, 48 were identified as being in whole or in part directly driven by population estimates. In fiscal year 1987, population estimates accounted for 39.2% of the total revenue disbursed through population statistics by formula grants, or $15 billion. In fiscal year 1988, population estimates are responsible for an estimated $15 billion, 38.3% of the total revenue disbursed through population statistics by formula grants.

Another 13 grant programs were identified as being, in whole or in part, indirectly driven by population estimates. In fiscal year 1987, statistics that used population estimates in their calculation accounted for $17 billion or 44.5% of the total allocations driven by population variables. In fiscal year 1988, indirect use of population estimates was responsible for an estimated $18 billion or 46.5% of the total allocations driven by population variables.

## Discussion

Estimates of population, and statistics that use population estimates in their calculation, accounted for an estimated $32 billion of revenue allocation in fiscal year 1987 and an estimated $34 billion in revenue allocation in fiscal year 1988. Therefore, population estimates cannot be taken lightly; they have a immense impact on policy decisions and budgetary concerns at all levels of government. The impact of population estimates is compounded because some states use estimates of population and population characteristics to distribute state-level appropriations of federal money to sub-state areas. Also, some states have their own revenue-sharing programs that appropriate state tax revenues to sub-state geography. Future research is needed to understand the full impact of population estimates on the fiscal structure of state and local governments. The amount of appropriations dependent upon population estimates calls for a careful examination of accuracy and limitations of the estimates before implementing these statistics in any fiscal program. ❐

1. Amounts of revenue appropriations in this study do not correspond exactly to figures represented in the report released by the U.S. Bureau of the Census: Federal Expenditures by State for Fiscal Year 1987 due to different data collection procedures.

2. For further information on specific grants refer to the 1988 Federal Catalog of Domestic Assistance (U.S. General Services Administration, 1988).

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## Appendix

### Programs In The Federal Catalog Of Domestic Assistance With Funding Driven By Population Statistics

The programs listed in this appendix are those that use population variables in all or in part to allocate expenditures through population-driven funding to sub-national areas. Not included are programs that use population variables only in eligibility formulas. Programs that use population to allocate funding to regional administrative program offices for discretionary dispersal are also not included. Finally, for the sake of brevity only the portions of the formulas that pertain to population variables are displayed.

**Program 10.203—Payments to Agricultural Experiment Stations**
Funding Formula: 26% by state percent of U.S. rural population.
Source: 1980 census.
Expenditures: FY 87—$149,239,435.
FY88 (Est.)—$149,000,000.

**Program 10.410—Very Low and Low Income Housing Loans**
Funding Formula: 33.3% by state percent of U.S. rural population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$1,155,346,000.
FY88 (Est.)—$1,339,000,000.

**Program 10.417—Very Low Income Housing Repair Loans and Grants**
Funding Formula: 33.3% by state percent of rural population over age 62.
Source: 1980 census.
Expenditures: FY87—$19,900,000.
FY88 (Est.)—$23,800,000.

**Program 10.418—Water and Waste Disposal Systems for Rural Communities**
Funding Formula: 50% by state percent of U.S. rural population.
Source: 1980 census.
Expenditures: FY87—$448,000,000.
FY88 (Est.)—$438,000,000.

**Program 10.423—Community Facility Loans**
Funding Formula: 50% by state percent of U.S. rural population.
Source: 1980 census.
Expenditures: FY87—$95,700,000.
FY88 (Est.)—$95,700,000.

**Program 10.500—Cooperative Extension Service**
Funding Formula: 50% by state percent of U.S. rural population.
Source: 1980 census.
Expenditures: FY87—$332,701,248.
FY88 (Est.)—$345,300,000.

**Program 10.550—Food Distribution**
Funding Formula: 60% by number of people in state below poverty level; 40% by number of unemployed persons.
Source: 1980 census and U.S. Bureau of Labor Statistics.
Expenditures: FY87—$2,105,444,000.
FY88 (Est.)—$2,146,000,000.

**Program 10.568—Temporary Emergency Food Assistance**
Funding Formula: 60% by number of people in state below poverty level; 40% by number of unemployed persons.
Source: 1980 census and U.S. Bureau of Labor Statistics.
Expenditures: FY87—$50,000,000.
FY88 (Est.)—$50,000,000.

**Program 13.141—Alcohol, Drug Abuse Treatment and Rehabilitation Block Grants**
Funding Formula: 45% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$163,000,000.
FY88 (Est.)—$156,000,000.

**Program 13.600—Administration for Children, Youth and Family—Head Start**
Funding Formula: 50% by state percent of U.S. population under age 6 in families below poverty level.
Source: 1980 census.
Expenditures: FY87—$1,130,059,000.
Estimated FY 88—$1,206,000,000.

**Program 13.614—Child Development Associate Scholarships**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$1,000,000.
FY88 (Est.)—$1,400,000.

**Program 13.623—Administration for Children, Youths and Family—Runaway and Homeless Youth**
Funding Formula: 100% by state percent of U.S. population under age 18.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY 87—$23,250,000.
FY88 (Est.)—$26,000,000.

**Program 13.630—Administration on Developmental Disabilities, Base Support and Grants**
Funding Formula: 66.7% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$72,500,000.
FY88 (Est.)—$77,000,000.

**Program 13.633—Special Programs for the Aging, Title III, Part 13**
Funding Formula: 100% on state percent of U.S. population over age 60.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$270,000,000.
FY88 (Est.)—$269,000,000.

**Program 13.635—Special Programs**

for the Aging, Title III, Part C
Funding Formula: 100% on state percent of U.S. population over age 60.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$419,000,000. FY88 (Est.)—$417,000,000.

**Program 13.641—Special Programs for the Aging, Title III, Part D**
Funding Formula: 100% on state percent of U.S. population over age 60.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$4,800,000. FY88 (Est.)—$4,800,000.

**Program 13.643—Children's Justice Grants to States**
Funding Formula: 100% by state percent of U.S population under age 18.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$0. FY88 (Est.)—$6,200,000.

**Program 13.645—Child Welfare Service—State Grants**
Funding Formula: 50% by state percent of U.S. population; 50% by per capita income by state.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures FY87—$222,500,000. FY88 (Est.)—$239,350,000.

**Program 13.667—Social Service Block Grants**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$2,700,000,000. FY88 (Est.)—$2,700,000,000.

**Program 13.669—Administration for Children, Youth and Families—Child Abuse and Neglect State Grants**
Funding Formula: 100% by state percent of U.S. population under age 18.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$12,000,000. FY88 (Est.)—$11,500,000.

**Program 13.671—Family Violence Prevention and Services**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$8,500,000. FY88 (Est.)—$8,100,000.

**Program 13.673—Grants to States for Planning and Development of Dependent Care Programs**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$4,800,000. FY88 (Est.)—$8,400,000.

**Program 13.714—Medical Assiatance Program (Medicaid, Title XIX)**
Funding Formula: 50% by state per capita income.
Source: U.S. Bureau of Economic Analysis.
Expenditures: FY87—$27,520,122,000. FY88 (Est.)—$30,570,000,000.

**Program 13.992—Alcohol, Drug Abuse/Mental Health Service Block Grants**
Funding Formula: 50% by state percent of U.S. population; 50% by state per capita income.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures: FY87—$509,000,000. FY88 (Est.)—$487,000,000.

**Program 14.157—Housing for the Elderly and Handicapped**
Funding Formula: 100% by number of elderly over age 62 and of handicapped over age 18 having income 50% below the median family income.
Source: Survey of Income and Education, U.S. Bureau of the Census.
Expenditures: FY87—$557,000,000. FY88 (Est.)—$566,000,000.

**Program 14.218—Community Development Block Grants/Entitlement Grants**
Funding Formula: 12.5% population estimates; 40% persons below poverty level, 1980 census; 10% the lag in population growth as computed from population in 1960 to current estimated population.
Source: 1960, 1970, and 1980 censuses and latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$2,059,570,000. FY88 (Est.)—$1,973,000,000.

**Program 14.219—Community Development Block Grants/Small Cities Program**
Funding Formula: 12.5% population estimates; 40% persons below poverty level, 1980 census' 10% the lag in population gorwth as computed from population in 1960 to current estimated population.
Source: 1960, 1970, and 1980 censuses and latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$38,407,000. FY88 (Est.)—$36,900,000.

**Program 14.221—Urban Development Actgion Grants**
Funding Formula: 14.3% in population lag; 14.3% in decline in per capita income since 1960.

Source: 1960 census and latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$379,000,000. FY88 (Est.)—$379,000,000.

**Program 14.228—Community Development Block Grants/State's Programs**
Funding Formula: 12.5% population estimates; 40% persons below poverty level, 1980 census; 10% the lag in population growth as computed from population in 1960 to current estimated population.
Source: 1960, 1970, and 1980 censuses and latest population estimates, Bureau of the Census.
Expenditures: FY87—$844,193,000. FY88 (Est.)—$753,000,000.

**Program 14.850—Public and Indian Housing**
Funding Formula: 20% by county population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$3,552,544,000. FY88 (Est.)—$4,062,000,000.

**Program 16.540—Juvenile Justice and Delinquency Prevention**
Funding Formula: 100% on state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$42,000,000. FY88 (Est.)—$42,000,000.

**Program 16.575—Crime Victim Assistance**
Funding Formula: 100% on state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$30,700,000. FY88 (Est.)—$35,270,000.

**Program 16.579—State and Local Narcotics Control Assistance**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$148,000,000. FY88 (Est.)—$86,000,000.

**Program 17.235—Senior Community Service Employment Program**
Funding Formula: 50% by number of people in state over age 55; 50% by state per capita income.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures: FY87—$336,000,000. FY88 (Est.)—$331,000,000.

**Program 20.205—Highway Planning and Construction**
Funding Formula: 50% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$12,903,909,000. FY88 (Est.)—$13,340,000,000.

**Program 20.218—Motor Carrier Safety Assistance Program**
Funding Formula: 50% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$44,750,000. FY88 (Est.)—$41,742,000.

**Program 20.505—Urban Mass Transportation Technical Study Grants**
Funding Formula: 100% by MSA population density.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$45,614,000. FY88 (Est.)—$51,200,000.

**Program 20.507—Urban Mass Transportation Capital and Operating Assistance**
Funding Formula: 20% by population of urbanized areas; 20% population density of urbanized areas.
Source: 1980 census.
Expenditures: FY87—$2,154,577,000. FY88 (Est.)—$1,741,000,000.

**Program 20.600—State and Community Highway Safety**
Funding Formula: 75% by total population of state.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$121,400,000. FY88 (Est.)—$115,000,000.

**Program 45.129—Promotion of the Humanities State Programs**
Funding Formula: 22% on state population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$21,179,000. FY88 (Est.)—$21,300,000.

**Program 66.418—Construction Grants for Waste Water Treatment Works**
Funding Formula: 50% by state percent of U.S. population, 1980 census; 12.5% by state percent of U.S. population in 1976.
Source: 1980 census and 1976 population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$2,169,200,000. FY88 (Est.)—$2,144,000,000.

**Program 66.432—State Public Water System Supervision**
Funding Formula: 30% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$33,450,000. FY88 (Est.)—$33,000,000.

**Program 66.433—State Underground Water Source Protection**
Funding Formula: 33.3% by state population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$9,800,000. FY88 (Est.)—$11,500,000.

**Program 66.801—Hazardous Waste Management—State Program Support**
Funding Formula: 20% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$63,000,000.
FY88 (Est.)—$71,000,000.

**Program 81.041—State Energy Conservation**
Funding Formula: 40% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$9,500,000.
FY88 (Est.)—$9,200,000.

**Program 81.050—Energy Extension Service**
Funding Formula: 50% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$4,000,000.
FY88 (Est.)—$4,000,000.

**Program 81.052—Energy Conservation for Institutional Buildings**
Funding Formula: 50% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$35,600,000.
FY88 (Est.)—$36,600,000.

**Program 83.503—Civil Defense—State and Local Emergency Management Assistance**
Funding Formula: 25% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$54,123,000.
FY88 (Est.)—$54,123,000.

**Program 84.010—Educationally Deprived Children—Local Education**
Funding Formula: 20% by counties number of children ages 5-17 in families below poverty level.
Source: 1980 census.
Expenditures: FY87—$3,453,400,000.
FY88 (Est.)—$3,830,000,000.

**Program 84.034—Library Services (LSCA—Title 1)**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$78,400,000.
FY88—$77,400,000.

**Program 84-035—Interlibrary Cooperation and Resource Sharing**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$17,600,000.
FY88 (Est.)—$18,300,000.

**Program 84.048—Vocational Education—Basic Grants to States**
Funding Formula: 50% state percent of U.S. population age 20-24, 25-65; 50% by state's per capita income.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures FY87—$808,546,441.
FY88 (Est.)—$798,700,000.

**Program 84-049—Vocational Education—Consumer Homemaking Education**
Funding Formula: 50% by state percent of U.S. population age 20-24, 25-65; 50% by state's per capita income.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures: FY87—$31,673,000.
FY88 (Est.)—$32,900,00.

**Program 84.053—Vocational Education—State Councils**
Funding Formula: 50% by state percent of U.S. population age 20-24, 25-65; 50% by state's per capita income.
Source: latest population estmates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures: FY87—$7,500,000.
FY88 (Est.)—$7,800,000.

**Program 84.126—Rehabilitation Services—Basic Support**
Funding Formula: 50% by state percent of U.S. population; 50% by state's per capita income.
Source: latest poulation estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Econmomic Analysis.
Expenditures: FY87—$1,278,000,000.
FY88 (Est.)—$1,376,000,000.

**Program 84.151—Improving School Program—State Block Grants**
Funding Formula: 100% by state percent of U.S. population age 5.17.
Source: latest population estimates, U.S. Buireau of the Census.
Expenditures: FY87—$500,000,000.
FY88 (Est.)—$478,000,000.

**Program 84.161—Client Assistance for Handicapped Individuals**
Funding Formula: 100% by state percent of U.S. population.
Source: latest population estimates, U. S. Bureau of the Census.
Expenditures: FY87—$7,100,000.
FY88 (Est.)—$7,500,000.

**Program 84.164—State Grants for Strengthening the Skills of Teachers and Instruction**
Funding Formula: 90% by state percent of U.S. population age 5-17.
Source: latest population estimates, U.S. Bureau of the Census.
Expenditures: FY87—$72,890,000.
FY88 (Est.)—$108,900,000.

**Program 84.169—Comprehensive Services for Independent Living**
Funding Formula: 100% by state percent of U.S. population.
Source: latest popultion estimates, U.S. Bureau of the Census.

Expenditures: FY87—$11,800,000.
FY88 (Est.)—$12,300,000.

**Program 84-174—Vocational Education—Community Based Organization**
Funding Formula: 50% by state percent of U.S. population, age 15-19, 20-24, 25-65; 50% by state's per capita income.
Source: latest population estimates, U.S. Bureau of the Census, and per capita income, U.S. Bureau of Economic Analysis.
Expenditures: FY87—$6,000,000.
FY88 (Est.)—$6,800,000.


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# Indiana Business Review

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## The National Outlook


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# Midyear Review of the Outlook for 1989

**Bruce L. Jaffee**

*Chairperson and Professor of Business Economics and Public Policy, Indiana University School of Business*

The first six months of 1989 have not shaken our confidence in the broad outlines of its outlook for the national economy in 1989. Last December, we predicted positive but sluggish growth in real GNP in 1989 with modestly rising inflation, continued improvement in our trade balance, reductions in the rates of growth of consumption and investment, and little progress in reducing the federal budget deficit. Real GNP grew at a faster seasonally adjusted annual rate during the first quarter of 1989 than it did during the fourth quarter of 1988, but that increase was somewhat artificial; if the lingering effects of the 1988 drought were removed, real growth in the first half of the year was significantly less than the growth in the last half of 1988. We continue to believe that a recession will be avoided during 1989 and that on a year-over-year basis real GNP will grow between 2.0% and 2.5%. While the overall structure of our forecast appears to be on the mark, there a number of details that have suprised us somewhat during the first half of 1989.

Probably the most unexpected development is the strength of the dollar during the first half of the year. From its peak in February 1985, the dollar declined in value sharply for the next two years. But since then the dollar's decline has, at best, been modest. In fact, it has increased in value during the last few months. The strength of the dollar reflects real interest rates in the United States, continued growth of the U.S. economy, a positive investment climate in the United States, and a concern about political instability in Japan and West Germany. Our trade balance in this environment has continued its slow improvement. On a twelve-month moving average basis our merchandise trade deficit peaked in early 1988 at nearly $13 billion per month. While still significant, this trade balance is now running in the $9-10 billion-per-month range. There has been little improvement in our merchandise trade balance with Japan and the so-called newly industrialized countries (Singapore, Hong Kong, South Korea, and Taiwan), but our trade balance has improved significantly relative to Canada and Western Europe. Nonetheless, the trade deficit and the current account deficit are likely to linger unless the dollar depreciates further in value, and that decline in value is unlikely to be as great in 1989 as we predicted last December.

The strength of the U.S. stock market during early 1989 was also a surprise. A slowdown in the economy, rising interest rates, and stagnant corporate earnings are usually associated with a down market. Investor confidence in the first part of this year has been propelled by increases in the value of the dollar, a belief that a soft landing will occur, and feelings that inflation will not be a major problem. We still cling to our prediction that the market is fully valued if not overvalued at its current (late May) levels.

A third area that is receiving considerable attention is the rise in inflation in the first half of 1989. Capacity constraints, especially in the export-related sectors of the economy, and the increased value of the dollar are two important factors for the increase in inflation. Much attention has been given to the rapid increase in energy prices during the first few months of 1989 due to actions by OPEC, the oil spill in Alaska, and the drilling platform explosion in the North Sea. However, we view these as temporary phenomena and with increased production levels within OPEC we expect energy prices to decline from their current levels.

We predicted last December that the federal deficit would remain at the $150 billion annual level. Although the fiscal year 1990 budget now being developed in Washington will formally come under the Gramm-Rudman-Hollings target of $100 billion, that goal is achieved only through creative accounting—moving expenditures and revenue between fiscal years and taking some significant expenditures, such as the savings and loan bailout, to off-budget categories. On a more positive note, we are pleased that Congress and the Executive Branch have agreed relatively early on a spending target for fiscal year 1990 of approximately $1.2 trillion. This will give decision makers some time to work on improving consistency and efficiency within government expenditure programs.

In summary, we continue to see 1989 as a slow growth year, but one that has relatively balanced growth among the major sectors and avoids the recession that many people predicted for the year.

# Personal Consumption

**J. Fred Bateman**

*Professor of Business Economics and Public Policy, Indiana University School of Business*

Last fall we forecast a growth in aggregate consumption of about 1.5%, down from previous years in the current economic expansion. We saw it remaining a positive factor in the economy, but not a robust or leading sector. We find no reason to alter that aggregate forecast. Although spending on some

products, particularly durable goods, foreign-made products, and goods sensitive to interest rate levels, is less than expected, we believe that continued growth of disposable income will keep overall consumer spending expanding, albeit at a modest rate.

Our forecast for the major components of consumption also remains valid. Consumer spending on services, rising at about a 4% annual rate, is stronger that at any time during the recent past. Given their sensitivity to income growth and their general insensitivity to interest rates, services should continue to be the strongest component of personal consumption spending for the coming months. Expenditure growth for nondurables is behaving in the generally weak pattern we foresaw last fall. And durable goods consumption has softened relative to previous years.

*Given their sensitivity to income growth and their general insensitivity to interest rates, services should continue to be the strongest component of personal consumption spending for the coming months.*

Within the components, however, some adjustments in our forecast are needed. The most important of these are to our outlook for automobile sales and energy prices. Our forecast of stability or a modest gain in auto purchases has proven to be too optimistic. Despite strong marketing efforts that include various buyer incentive programs, auto sales have been weak, taking a sharp drop during the fourth quarter of 1988 and showing only a small rebound in early 1989. This weakness is generally attributed to higher interest rates and rising import prices.

In December, we foresaw at most only "slightly higher energy prices." Without quibbling on how much that could imply, it is reasonable to assume that has already occurred early this year. Thus our outlook for this area may also turn out to have been somewhat optimistic. As summer approaches fuel prices may follow their normal pattern of increases, adding to what already has happened. We still do not, however, see energy prices rising so sharply as to cause major disruption in the economy and its predicted 1989 growth rate.

To conclude, we find no reason to change our basic conclusion regarding personal consumption in the 1989 economy. Spending overall will remain positive but weak. What strength there is derives almost completely from the consumption of services, the effect of which has been to offset poor automobile sales and weak durable goods markets generally. A sustained interest rate decline might stimulate auto sales later in the year, but our overall forecast of a 1.5% growth in consumption spending appears reasonable. Whatever strength there is in economic growth this will will originate in areas other than personal consumption.

## Nonresidential Investment

Lawrence S. Davidson

*Associate Professor of Business Economics and Public Policy, Indiana University School of Business*

Last December we forecast that business capital spending would slow from the blistering 1988 pace and settle in at a sustainable 7% annual growth rate for 1989. Events since November suggest a slightly slower pace, approximately 6%.

What has *not* changed is that American industry, primarily the manufacturing sector, is faced with an insufficient capital stock. Capital spending expanded vigorously in 1988, but a disproportionate share of the expansion was in business equipment, with less of the increase relegated to structures. There is, therefore, substantial pressure for more spending on structures. First, capacity utilization rates in export industries are very high, and these firms cannot produce much more without expanded plants. Second, multinational firms will continue to locate new plants here. While the falling dollar has inspired more firms to locate in the U.S., some firms worry they might be denied direct entry to "Fortress Europe." These firms, unable to move to Europe in the near future but desiring eventual access to this new large market, might see a location in the U.S. today as a potential back door to European markets after 1992. Third, firms who want to continue to compete in global markets know that they must modernize their productive capital, and while the first wave of change may have been concentrated in equipment purchases, additional spending on structures can't be too far behind.

So what has changed? For one thing, interest rates rose to the top of our 1989 forecast ranges early in 1989. We do not expect them to rise much more, and although these higher interest rates will largely affect residential investment, we can't ignore the effect this increase might have on the marginal construction project. The direct financial impact of higher interest rates is often swamped by other long-term considerations, but if higher rates turn into slower sales projections, then some investment

projects may be postponed.

Another new piece of information comes from the Commerce Department's survey of intended business plant and equipment spending, which reports that managers plan to spend less than they revealed in earlier surveys. An unexpected increase in business inventories, a large swing upward in energy prices in early 1989, and steeply rising interest rates have tempered their plans for the future.

Managers can't put off capital expansion and modernization plans much longer. While short-term profitability and liquidity constraints may add or subtract a point or two from investment spending, without a full-fledged recession scenario shaping up, the urge to fend off international competition should keep business spending growing at least at a pace of 6% for the foreseeable future. Most executives recognize that global business and competition is a growing part of their futures, and they do not expect much effective protection from government policies. Capital expansion, not increased protectionism, is a more permanent way to oust their competitors.

## Fiscal Policy

**R. Jeffery Green**

*Professor of Economics and Co-Director, Center for Econometric Model Research, Indiana University*

In the *IBR* outlook published last December, we forecast a slight decline in constant dollar federal government purchases of goods and services. It now appears that these purchases will be at levels slightly above those of 1988, with most of the increase occurring in the first quarter of this year. The revised projections can be seen in the **Table**. State and local government purchases have also been revised upward, but by very small magnitudes.

Our December outlook projected a fiscal year 1989 budget deficit of about $150 billion. That forecast was slightly more than the government's October 1988 projection of $145 billion and more than $10 billion above the Gramm-Rudman-Hollings (GRH) target of $136 billion. It now appears the deficit will be even greater, probably near $160 billion. The irony is that even if this happens, it will have no impact on future government spending.

The reason is that the GRH legislation requires only that the forecast deficit just prior to the beginning of a fiscal year be within $10 billion of the GRH target. Once the fiscal year begins, no automatic cuts take place no matter how large the deficit becomes. This feature of the GRH law has provided incentives for Congress and the Administration to create clever ways to make the projected deficit meet the target even when actual spending is well beyond target.

Any deficit forecast must be based upon economic assumptions. By making those assumptions extremely optimistic, forecasters and significantly raise their revenue projections. The fastest-growing component of Federal spending has been interest on the debt. It has grown increasingly rapidly both because large deficits in recent years have been expanding the debt outstanding and because interest rates have been rising recently. By forecasting large decreases in interest rates, projections of interest expenses can be lowered. The GRH projection of last October assumed the Treasury bill rate for 1989 would average 5.6%. In fact, for the first four months of 1989, the Treasury bill rate has averaged over 8.5%. Transfer payments, such as unemployment compensation and food stamps, depend upon the level of output and employment in the economy. Very optimistic projections of real growth and employment can lower the projected growth in spending on transfers.

*The GRH projection of last October assumed the Treasury bill rate for 1989 would average 5.6%. In fact, for the first four months of 1989, the Treasury bill rate has averaged over 8.5%.*

There are additional varieties of "smoke and mirrors" that can be used to meet GRH target. Asset sales can reduce the deficit in a given year. The government must estimate the probable receipts from such sales and by inflating estimates can reduce the

**Table**
**Government Purchases of Goods and Services**
**(billions $1982)**

| | *1988:4* | *1989:1* | *1989:2* | *1989:3* | *1989:4* |
|---|---|---|---|---|---|
| Federal | 335.5 | 333.2 | 330.6 | 331.6 | 330.6 |
| State/Local | 460.0 | 464.5 | 467.3 | 470.0 | 472.8 |

deficit projection. Since expenditures actually incurred during a fiscal year don't affect GRH targeting, expenditures can be moved forward so that we spend money this year rather than next. This will make it easier to meet next year's target. This is an example of how the GRH targeting can increase current spending. Finally, some large expenditures threaten to destroy GRH targeting in spite of all these tricks. An example is the $50 billion, perhaps more, that will be needed for the bailout of insolvent savings and loans. In this case, the expenditures were simply moved off-budget so they will not count in the GRH calculation.

Unfortunately, we have reached a point where the government is losing its grip on fiscal policy. The GRH legislation may no longer be effective; in fact, it may be inhibiting the search for fiscal restraint by deluding legislators and the public into the view that progress is being made.

## The International Economy

**Michele Fratianni**

*Professor of Business Economics and Public Policy, Indiana University School of Business*

In the December 1988 issue of the *IBR* we said that "the existing pattern of current-account deficits and surpluses in the world cannot persist. The U.S. has become a debtor country. Although the actual size of this indebtedness is unknown with any degree of precision, it is clear that current and prospective current-account deficits will add significantly to net debt." Since then the dollar has appreciated in the exchange markets. How can we explain the strength of the dollar in light of the magnitude and persistence of the external deficit? What changes in our projections need we make as a result of new information? These are the issues of this brief midyear update.

The strength of the dollar can be justified by the fact that real interest rates on U.S. assets exceed those prevailing in other currencies. For example, on the basis of 3-month Eurocurrency interest rates and 3-month forecasts of the inflation rate measured by the CPI, as recently as the end of April 1989 real interest rates in U.S. dollars were approximately 1% higher than in DM and Yen. The higher real rate differential induces investors around the world to place funds in U.S. dollars in preference of DM and Yen. Hence the appreciation of the dollar in the spot market.

The actions of the monetary authorities here and abroad are critical for the future course of the dollar. At the time of writing (mid-May) it appears as if the Fed has stopped tightening and that Germany and Japan may accept higher levels of market interest rates. Should that happen, the dollar will level off. Official interventions in the exchange markets are another factor influencing the value of the exchange rate over a period of weeks. Such short-term considerations nonetheless should not obscure the fundamental forces at work, which were highlighted in the opening paragraph. Over the long term the dollar remains under pressure. The size of the current-account deficit calls for an additional real depreciation of our currency, regardless of whether or not the monetary authorities of the seven Summit countries intervene in the exchange markets. Although the timing of this depreciation cannot be predicted with any degree of precision, we "stick" with our December 1989 forecast of a dollar depreciation.

*The size of the current-account deficit calls for an additional real depreciation of our currency, regardless of whether or not the monetary authorities of the seven Summit countries intervene in the exchange markets.*

The April 1989 issue of the *World Economic Outlook* of the International Monetary Fund assesses that the correction of the external imbalances of the U.S., Germany, and Japan will slow down in 1989, implying further pres-

**Table**
**Midyear International Forecast**

| | *1988* | *1989* |
|---|---|---|
| Exports ($1982, NIA, % change) | 20 | 10 |
| Imports ($1982, NIA, % change) | 6 | 5 |
| Trade Balance ($ billion) | –128 | –110 |
| Current Account ($ billion) | –138 | –133 |
| Dollar/Yen Change (4th qt. to 4th qt.) | –7% | –7% |
| Dollar/DM Change (4th qt. to 4th qt.) | +4% | –4% |
| Effective Dollar Exchange Rate Change (FRB Index, 4th qt. to 4th qt.) | +1% | –5% |

sure on exchange-rate movements and on policymakers—especially those living in Washington, D.C.—to take actions. According to the baseline projection of the Fund, "[M]arket participants eventually will regard the prospective accumulation of U.S. external debt as unsustainable and will reduce their demand for U.S. assets."

The midyear forecast dos not alter fundamentally that of December 1988. See the **Table** for the summary.

## Interest Rates and Financial Markets

**Robert C. Klemkosky**

*Fred T. Green Professor of Finance, Indiana University School of Business*

The interest rate and stock market forecasts in the December 1988 issue of the *IBR* have been partially correct, which also means that they have been partially wrong. The December forecast was for stable to slightly higher interest rates, and that has occurred for long-term rates. However, short-term U.S. Treasury rates have risen by more than 100 basis points (1%) only to fall back in recent weeks to the upper end of the range forecast in December. Also, real economic growth appears to have decelerated this year to the forecasted 1.5-2.5% range from the 3.5% growth rate in 1988. One surprise in 1989 has been the value of the dollar relative to other major foreign currencies. A substantially weaker dollar would have hurt U.S. interest rates and stock prices. What has occurred in 1989 is a strengthening dollar, the result of progress on our trade deficit and political uncertainties in Japan and West Germany. The trade deficit for March was surprising $8.86 billion, and every month in 1989 has experienced a trade deficit in single digits compared to several months in 1988 when the monthly trade deficit was in double digits.

*A hard landing (a recession) obviously would depress stock prices, as would an economy strong enough to increase inflationary expectations and higher interest rates.*

The big surprise in 1989 has been the performances of the U.S. stock market. The Dow Jones Industrial Average and Standard & Poor's 500 Stock Index have risen about 15% as of May 1989, substantially above the December forecast for a flat-to-down stock market. Interest rates are slightly higher, the economy has slowed, and the growth rate of corporate earnings has declined as forecasted. What many investors are expecting in 1989-90 is a soft landing for the economy in which we would experience: (1) slower economic growth without recession; (2) moderating inflation in the second half of 1989; (3) lower interest rates; and (4) a stable dollar. Whether this occurs will be important to the stock market in the second half of 1989. A hard landing (a recession) obviously would depress stock prices, as would an economy strong enough to increase inflationary expectations and higher interest rates. Other reasons for the strong stock market performance in the first half include: (1) monetary policy that has not been unreasonably tight; (2) continuing strong corporate demand for common stock for mergers, LBOs, and repurchases; and (3) low equity ownership among institutional investors.

The forecast is for stable interest rates in the second half of 1989. The stock market is projected to be down-to-flat in the second half. Earnings growth has peaked and price-earnings ratios are slightly above historical averages. The U.S. budget deficit remains and the stronger dollar will hinder any improvements in our trade deficit. All in all, common stock values still appear unattractive relative to returns available on money market instruments and bonds.

## Inflation, Unemployment, and Capacity Utilization

**Lawrence S. Davidson and Bruce L. Jaffee**

*Associate Professor, and Chairperson and Professor, Business Economics and Public Policy, Indiana University School of Business*

Last December we wrote that the rate of growth of demand in the economy would slow in 1989 but that the decline would be modest. We believed then that although the nation's factories were increasing their capacity utilizations, the increase would be gradual. Inflation would increase, but by only a small amount. Specifically, we predicted that consumer prices would rise by 4.5% to 5% in 1989. Given the slow pace of the economy, we also forecast that employment growth would also slow, yielding an average unemployment rate of about 5.4% in 1989.

Since December, a few unanticipated events have given us cause to recalibrate, but we feel that the basic direction of change has not been disturbed by what has recently transpired. For example, we based our

moderate rise in the inflation rate upon two major sets of factors. The first set is largely unchanged. That is, the underlying or core inflation rate has changed very little lately. While it is true that the inflation rate accelerated its pace in early 1989, the change in the consumer price index excluding the volatile prices of food and energy rose by only 4.3% at an annual rate between November of 1988 and March of 1989. It rose by only 4.2% over the entire year from March 1988 to March 1989. Furthermore, although the percentage increase in unit labor costs (the extra labor costs embodied in each additional unit of output produced) more than doubled in 1988, about two-thirds of the increase resulted from the absence of an increase in labor productivity in the business sector in 1988. As the hiring rate slows in 1989 and the productivity increase bounces back to a more normal number (say, 1.5% per year) unit labor costs should rise by no more than about 3.5% in 1989. This prediction is based also on an slight acceleration of hourly compensation. Workers in the private business sector were able to increase their compensation by about 4,8% in 1988 after obtaining increases of about 4.5% per year since about 1984. Even by raising our prediction to 5% for 1989, unit labor costs should hover in the 3.5% range, a number clearly compatible with overall inflation of less than 5%.

What has changed lately is the second major factor affecting short-term inflation—special cost factors. Our December forecast was predicated upon a declining value of the dollar and the then $15 spot price for a barrel of oil continuing into the first few months of 1989. Since early this year, unexpected events—like oil spills and off-shore drilling explosions—pushed oil to over $20 a barrel. Meanwhile, the dollar has appreciated. These factors lead us to raise modestly our forecast of inflation.

Other recently announced data have forecasters taking equivocal stances. On the one hand, a recent survey of manufacturing purchasing agents suggests that the economy may grow more rapidly later this year. On the other hand, the unemployment rate, which hovered near 5% for several months, climbed to 5.4% in March. This latter event suggests that the economy may be slowing even faster than we thought it would. Recent polls of forecasters show that more of the professionals have been reducing their economic growth forecasts. If they are right and the economy slows significantly this year, then core inflation should be lower.

Nevertheless, short-term fluctuations in growth, much like abrupt changes in monetary policy, affect the inflation rate with long, and sometimes complex, lags. Meanwhile, higher than anticipated food and energy prices are working their way through the U.S. economy. Firms faced with the continued force of international competition will pass through some, but not all, of their higher costs into prices. The rest of their cost increases will be revealed through lower profits and more conservative hiring practices. Based on these developments in the first half of the year, we now raise our inflation forecast range to 5.0% to 5.4% for the year and our average annual unemployment rate to 5.6%.

## Housing

**Jeffrey D. Fisher**

*Associate Professor of Finance and Real Estate and Director, Center for Real Estate Studies, Indiana University School of Business*

Housing starts for March were at a seasonally adjusted rate of 1.39 million units, almost exactly at the 1.4 million rate we projected for 1989. However, the rate dropped to 1.36 million in April, a six-year low. If interest rates continue to rise, housing starts will likely fall further. Interest rates rose from 10.77% to 11.19% over the first quarter.

Existing home sales also dropped 6.6% in April. High interest rates coupled with high home prices are hurting demand. However, sales were good in the more affordable areas such as Indianapolis, and Columbus, Ohio.

*This (first quarter 1989) is the first time since 1984 that the increase in CPI was greater than the increase in home prices for a quarter.*

Nationally, the price of existing homes rose 3.4% during the first quarter while the CPI increased 4.8%. This is the first time since 1984 that the increase in CPI was greater than the increase in home prices for a quarter. This raises the question of whether housing will continue to be an inflation hedge, as it has been since the 1970s. According to a study recently released by the Center for Real Estate Studies at Indiana University, the median home price in Indiana rose slightly to $54,000 from $53,500 during the first quarter of 1989. Home prices remain very affordable in Indiana relative to the rest of the nation. The housing affordability index for the state of Indiana was 166, which indicates that the median income family in Indiana has 66% more income than necessary to qualify for a loan on the median priced home in Indiana at current interest rates. During the same period, the index for the nation was 105.

# The Midyear Indiana Forecast

**Morton J. Marcus**

*Director, Indiana Business Research Center, Indiana University*

The Indiana unemployment rate for the first quarter of 1989 was at a 16-year low. Total employment continues to rise, and manufacturing employment is once again on the increase. After nearly a decade of concern it would be delightful to have sustained strong expectations.

Unfortunately, slow national growth patterns typically are adverse for the economy of Indiana. When American consumers and investors defer spending on capital goods, whether they be office buildings or washing machines, Indiana's strong manufacturing and transportation sectors realize the consequences of those decisions. If interest rates are sustained or increased in the months ahead, Indiana will see a marked decline in growth. It is unlikely, however, that the state will experience a recession as measured by total personal income.

*Real* total personal income for Indiana reached a peak in the first quarter of 1979 at $61.7 billion (in 1982 constant dollars, see **Figure 1**). It was to be 28 quarters before that level was regained. After seven years of decline and recovery, the state's economy passed that previous record at $62.6 billion in the first quarter of 1986 and has been climbing since then. In the final quarter of 1988, total personal income for Indiana stood at $65.8 billion, 6.6% above the 1979 peak.

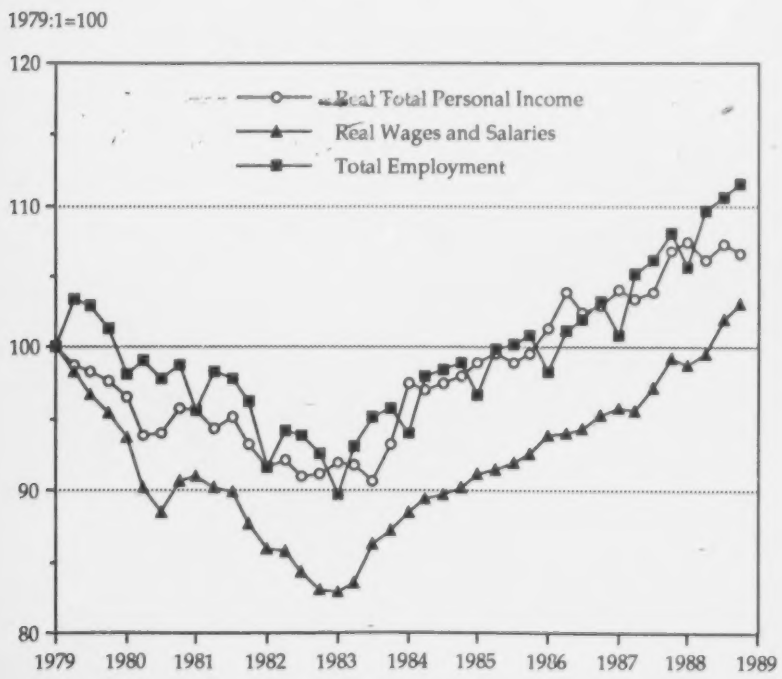
Total employment in Indiana at the start of 1979 stood at 2,424,000. In the fourth quarter of 1988, the state reported employment at 2,702,000, a prodigious gain of 11.5% and nearly twice the rate of gain recorded in *real* total personal income.

The situation is more somber when we look at the wages and salaries generated by that employment (Figure 1). Indiana's *real* wages and salaries (again in 1982 dollars) in the first quarter of 1979 were $39.7 billion, a historical high. That level was not reached again until 38 quarters had passed. Then, in the third quarter of last year, the workers of this state once again were on new ground at $40.5 billion. By the end of the year, workers were receiving 3.1% more in real wages and salaries from 11.5% more employment. That is not a record for a decade's economic progress, even though we are on new high ground.

During this time, Indiana's share of total U.S. personal income continued a decline. This trend has been ongoing since the mid-1960s (see **Figure 2**). At the end of 1965, Indiana had 2.5% of total U.S. personal income. With a declining share of population *and* a concurrent decline in per capita income relative to the nation, Indiana slipped below 2% of U.S. personal income for the first time in 1988. With an expectation that our state will not perform as well as the nation in 1989 and early 1990, we will not see Indiana regain the 2% level at any time in the foreseeable future.

Indiana's personal income is no longer as driven by fluctuations in wages and salaries as it had been. In the 1960s, the earnings of Hoosier

**Figure 1**
**Indiana's Income and Employment Record**
**1979-1988**



workers in the form of wage and salary disbursements equalled nearly 71% of total personal income. More recently, in the mid- to late 1980s, wages and salaries have averaged 60% of total personal income. Interest and dividend receipts have grown in importance with deregulation and diversification of financial institutions and opportunities. Transfers (social security and retirement payments particularly) are a more important part of income as well. In years of poor economic performance, unemployment compensation plays a greater role. Nonetheless, wages and salaries remain as the largest single element in personal income and have significant economic, psychological, and political importance.

The rest of this year and early 1990 will find real wages and salaries declining in Indiana as manufacturing employment growth slows and perhaps stops. Inflation, meanwhile, eats away at nominal gains of all workers. We do not expect the decline in real wages and salaries to be as severe as in the 1979-1982 recession, but it could be comparable to the 1970 slump that went virtually unnoticed outside the Midwest.

The economy of the next 12 months in Indiana will depend on the extent to which national auto sales, housing construction, and plant expansion are adversely affected by interest rate considerations. Even though manufacturing and the wage bill of that sector do not hold the same relative importance as in the past, we are not convinced that the state's economy is any less subject to fluctuations originating in that sector. Our base may have narrowed, but more of our services may rest on it.

The key question is, will fluctuations in output by manufacturers have the same income implications as in the past? If employment and hours worked are less tied to output levels with advances in production techniques, then the state's economy may be less sensitive to national business cycle fluctuations. It is possible we may have an answer to that question in the year ahead, whether we like it or not.

**Figure 2**
**Indiana's Share of U.S. Personal Income**
**1960-1988**

## Indianapolis

**Robert Kirk**

*Professor of Economics, Indiana University-Purdue University at Indianapolis, with data assistance from the Statistical Services Division of the Indiana Department of Employment and Training Services*

This forecast is based on assumptions about the national economy and Federal Reserve monetary policy in particular. It is assumed that the Federal Reserve will be more concerned with inflation than recession. When there is excess demand, the direct effect is on product prices. However, there is an indirect effect through factor markets and the costs of production. To the extent possible, these increased costs of production are passed through, giving the illusion of cost-push inflation. However, due to competitive forces, nationally and

**Table 1**
**Employment Change for Selected Metropolitan Areas**
**1983:4-1988:4 (%)**

| | *Initial Recovery 1983:4-1985:4* | *Dollar Depreciation 1985:4-1988:4* | *Total 1983-88* |
|---|---|---|---|
| *Manufacturing* | | | |
| Indianapolis | -1.7 | -1.7 | 0.0 |
| Chicago | -2.8 | 0.2 | -2.6 |
| Cincinnati | 3.8 | -1.8 | 2.0 |
| Columbus, OH | 5.5 | -2.5 | 2.9 |
| Detroit | 12.6 | -7.4 | 4.3 |
| Louisville | 1.5 | 2.2 | 0.7 |
| St. Louis | 1.4 | 0.4 | 1.8 |
| *Nonmanufacturing* | | | |
| Indianapolis | 10.3 | 16.0 | 28.0 |
| Chicago | 12.4 | 8.1 | 21.5 |
| Cincinnati | 10.5 | 15.9 | 28.0 |
| Columbus | 11.0 | 15.3 | 28.0 |
| Detroit | 11.5 | 9.4 | 22.0 |
| Louisville | 9.5 | 12.3 | 22.9 |
| St. Louis | 8.1 | 7.8 | 16.5 |

*Source: Department of Employment by State.*

**Table 2**
**Housing Production for Indianapolis Metropolitan Area, 1984-88**

| | *Absolute Change* | | *Percent Change* | |
|---|---|---|---|---|
| *Year* | *Single-Family* | *Multi-Famly* | *Single-Family* | *Multi-Family* |
| 1984-5 | 7136 | 4469 | 2.5 | 3.4 |
| 1985-6 | 5209 | 6790 | 1.8 | 6.8 |
| 1986-7 | 3135 | 7234 | 1.0 | 6.8 |
| 1987-8 | 6928 | 4573 | 2.3 | 4.0 |

*Source: Federal Home Loan Bank of Indianapolis.*

internationally, firms may not be able to pass through the cost increases, and upward price pressures would thereby be dampened. The rate of growth in the national economy can be expected to slow. The slowdown will occur in durable goods (autos), capital equipment, and defense.

How will this assumed national scenario affect the Indianapolis economy? Since the Indianapolis economy is more diversified than the state's economy, it should perform better. An examination of employment by industry during 1986-88 indicates that the expansion has been concentrated in the nonmanufacturing sectors, with significant increases occurring in business services, legal services, banking and investments, air transportation, trucking, and consumer expenditures-related areas.

Nationally, the percent of GNP composed of personal consumption expenditures has increased over the past decade to 66%. This trend has been expressed at the local level by increases in employment in apparel, furniture, home building materials, and restaurants. This trend has been driven in part by favorable demographics arising from the high growth rate of persons aged 25-44 during the 1980s. As we move into the early 1990s, this source of economic stimulation will be reduced. It is not yet clear how expenditure patterns will be affected by the aging process. Some analysts predict a higher saving rate, which would allow for a shift of resources away from consumption to investment. However, persons in their fifties have the highest amounts of discretionary income. Will it go for travel, retirement saving, a down payment on a child's first home, or what?

### Industrial Heartland

Some analysts have said "Rust Belt" is an inaccurate label for the Midwest, and argue "Industrial Heartland" is a more appropriate one. The "Rust Belt" characterization arose during the 1978-82 recession. Today, terms such as revival and turnaround are widely used. Part of the turnaround has been attributed to fundamental changes in the method of production, as illustrated by the steel and automobile industries. Capital has been substituted for labor. New technology has been imbedded in new equipment. Organizational charts have been flattened, bringing labor and management into a relationship that emphasizes mutual interests. Also,

beginning in 1985, the exchange value of the dollar fell and U.S. exports became more competitive in international markets. This benefited the Midwest, in particular.

How have selected Midwestern metropolitan areas responded since the recovery began in 1983? **Table 1** shows the changes in employment by manufacturing and nonmanufacturing sectors, fourth quarter 1983-fourth quarter 1988. The period is divided into two parts, the initial recovery from recession, 1983-1985, and further recovery and depreciation of the dollar, 1985-1988.

Output would be a better measure of economic change than employment because employment is an input and does not reflect productivity growth—which has been significant in many manufacturing industries. Also, to assume that "manufacturing employment" encompasses all manufacturing-related employment is questionable because manufacturing firms, to reduce costs, have "contracted out" to firms classified in "nonmanufacturing." For example, part of the high growth in business services employment is directly or indirectly linked to manufacturing.

In terms of total employment change, 1983-88, Columbus has done best, followed closely by Indianapolis and Cincinnati. During the more recent period, 1985-88, Indianapolis has done best, followed by Columbus and Cincinnati. Table 1 indicates that the source of Indianapolis' strength has been in the nonmanufacturing sector during the recent period. In the manufacturing sector, Indianapolis experienced two major plant closings. These decisions were made in corporate boardrooms outside the state and show the vulnerability of a local economy's manufacturing sector. In manufacturing, Detroit had the greatest increase, reflecting primarily the recovery from the recession, as recent period employment has declined. Only Louisville has had some expansion in manufacturing during the recent recovery and period of dollar depreciation. The depreciation of the dollar helped promote employment in some industries, but not enough to offset losses in others. Compared to other regions, the Midwest remains the "Industrial Heartland." However, our major metropolitan areas appear to be deriving growth from a variety of sources.

### Competitive Position

Usually at the later stage of the business cycle there is upward pressure on the costs of production. Compared to other parts of the country, Indianapolis is in a strong position. Land is cheaper than on the coasts. There is an adequate inventory of office space, resulting in a very competitive situation to attract office-type activities. The State of Indiana is building a new office building. When the building is occupied in 1991, state-leased space in privately-owned buildings will be vacated. We can hope that the city's promotional efforts to attract office users will be successful.

Housing inventories are adequate to support Indianapolis' image as a good housing value. **Table 2** provides recent housing production rates for the Indianapolis metropolitan area. A consequence of the continuing construction in multi-family units is that the metropolitan-wide vacancy rate remains slightly above 10%, resulting in aggressive promotional efforts.

An increasing concern is the quantity and quality of the labor supply. During the 1979-82 recession, Indiana experienced out-migration to Texas, Colorado, Oklahoma, and Louisiana. By 1987, there had been a turnaround. Also during the early 1980s, many Hoosiers migrated to Indianapolis in search of jobs. Indianapolis benefited from the supply of labor and the demand for housing.

Table 1 indicates that there has been no increase in manufacturing employment, 1985-1988. However, if we look at the rest of Indiana, we see that over this period there has been an increase of more than 35,000 manufacturing jobs (a 7.1% increase). Some persons who might have migrated to Indianapolis in the early 1980s have found jobs in their local areas. Therefore, as long as manufacturing demand holds up, communities in the rest of the state may continue to experience job growth and to hold their 25-34 year olds. But Indianapolis won't get the labor supply or housing demand it might have gotten earlier in the decade. In spite of attracting people from the rest of the state in the early 1980s, Indianapolis experienced a reduction during 1980-87 in the 20-24 age-group—the age group from which first-time labor force entrants is drawn. Thus, employers will have to invest more in in-house training and pay competitive wages.

### Construction

Major commercial, industrial and governmental/educational construction projects, such as the Circle Centre, Eli Lilly, State of Indiana Office Complex, and Indiana University-Purdue University at Indianapolis (a library and a science/engineering and technology building), will support demand for construction workers, although residential construction may not be as strong as in the past. New initiatives, such as one initiated by the nonprofit National Training and Information Center and supported by Fannie Mae, GE Capital, and major local banks, are attempting to increase the supply of housing for the low to moderate income household.

As Table 1 indicates, Indianapolis has done well in the region. The challenge will be to maintain the momentum. Uncertainties that could affect the forecast are acid rain legislation, above-average inventories of office space, a possible auto-based sales slowdown, and a longer-term labor supply problem. By appropriate preparation and planning today, these uncertainties can be met constructively if and when they occur.

## Gary-Hammond-East Chicago (Calumet Area)

**Leslie P. Singer**

*Professor of Economics, Indiana University Northwest*

Our midyear review offers no surprises. We had predicted steady growth in all sectors of the Northwest Indiana economy, and a continuation of that trend appears likely for the remainder of the current year. The usual seasonal factors will slightly slow down the third quarter. The fourth quarter will favor nonmanufacturing and a slight slowdown in steel.

We have just concluded an analysis of steel-related and other manufacturing firms that have recently relocated in Northern Indiana and found that the stabilization of the steel sector was the principal inducement for their selection of a Northwest Indiana location. This comes in spite of some earlier indications that this region's heavy dependence on steel might be waning. Steel is still very much the core industry of Northwest Indiana.

Much local attention is focused on an extension of the VRAs (Voluntary Restraint Agreements). VRAs expire in September. A five-year extension may appear to our international trading partners as protectionist. Economists have found it difficult to defend VRAs on theoretical grounds.

A recent study of the steel industry done with my colleague, Gary Lynch, has uncovered some surprising findings about cost functions in steel that might call some of the traditional free-trade theorems into question. There is no disagreement with the perception that the steel industry was oligopolistic and was protected in the past. However, international competition has made the industry more efficient and production has become technologically state of the art. Also, there has been a slight gain in consumer welfare owing to the fact that the rapid advance in steel prices has been halted, though at considerable cost in lost employment. In a separate study forthcoming in this journal, I show that foreign exporters have been systematically targeting American high-wage industries.

According to the Indiana Department of Employment, average weekly earnings in Northwest Indiana steel mills in February 1989 were $879.26, almost double the Indiana manufacturing weekly wage of $469.12. This, along with an overvalued dollar, made import penetration relatively easy. The current question is whether abolishing VRAs would continue to improve the productivity of U.S. steel plants and lead to lower prices as suggested by international trade theory.

Traditional theory suggests that as steel plants approach full capacity, as is the case at present, variable and marginal costs rise. If VRAs are extended, higher costs would be protected. Without VRAs, imports would alleviate the pressures on capacity and both costs and prices would fall.

We have culled the appended table from a larger study in order to show that traditional theory may not apply to steel. Similar results were obtained for five other steel companies. Clearly, variable costs per ton of raw steel produced declined as plants neared full capacity. During the phase from 1978 to 1982, the variable cost function shifted down as less-up-to-date plants were closed and the steel industry became more efficient. In the current

**Table**
**Northwest Indiana Employment (in 000s); Quarterly Averages, Seasonally Adjusted**

| | *Actual* | | *Estimate* | | | *Extrapolated* | | | |
|---|---|---|---|---|---|---|---|---|---|
| | *1988:4* | *1989:1* | *1989:2* | *1989:3* | *1989:4* | *1990:1* | *1990:2* | *1990:3* | *1990:4* |
| Total Employment | 233.60 | 231.20 | 233.14 | 235.92 | 238.65 | 236.31 | 239.05 | 240.36 | 240.63 |
| Manufacturing | 57.10 | 57.00 | 57.24 | 57.50 | 57.75 | 58.01 | 58.26 | 58.01 | 57.62 |
| Steel | 35.20 | 35.20 | 35.31 | 35.21 | 35.10 | 35.02 | 35.10 | 34.90 | 34.70 |
| Other Manufacturing | 21.90 | 21.80 | 21.94 | 22.29 | 22.65 | 23.01 | 23.16 | 23.11 | 22.92 |
| Nonmanufacturing | 176.40 | 174.20 | 175.90 | 178.42 | 180.90 | 178.30 | 180.79 | 182.35 | 183.01 |
| Trade | 55.21 | 54.81 | 56.90 | 58.27 | 59.68 | 58.31 | 59.72 | 61.16 | 61.99 |
| Services | 50.60 | 51.42 | 51.60 | 52.73 | 53.89 | 52.13 | 53.87 | 54.57 | 55.91 |
| Government | 32.10 | 32.11 | 32.01 | 32.19 | 32.21 | 32.00 | 32.19 | 31.31 | 31.62 |

phase, with no more plants to close, high sunk costs and plant closing laws in effect, termination of VRAs would lower per plant capacity and would raise both average variable costs and per unit costs (average total cost). Moreover, if VRAs are not extended, several steel companies—including USX—may have to import slabs and other semi-finished products to remain competitive, resulting in job losses in Northwest Indiana.

If import penetration prevents upward adjustment in prices, as per unit costs rise, net revenue falls and continued plant modernization may be jeopardized. Our study revealed that net revenue per ton of raw steel produced in 1978, before depreciation, in 1987 dollars was $67.38 at 87.3% average capacity utilization. Net revenue declined to $11.92 at 49.4% average capacity utilization in 1983, then rebounded to $54.60 per ton in 1987 as capacity utilization rose to an average of 72%. Our studies suggest that the rise in per ton revenue was mostly due to lower average variable costs and not to higher prices for steel (except for inflation, which was factored out of the present relationship). It is not surprising, therefore, that VRAs are a very hot issue in Northwest Indiana.

The implication of constant average variable costs were analyzed as early as 1929 by Pierro Sraffa ("The Laws of Return under Competitive Conditions," *Economic Journal*).

Our forecasts are based on the assumptions that VRAs will be extended, that there will not be a long steel strike this year, and that wage settlements will be moderate. We show a slowing down of the local economy towards the third quarter of 1990 (see the **Table**). There may even be a brief downturn before 1990 ends. The figures are seasonally adjusted averages and do not reflect the significant fluctuations in the average work week in steel and other manufacturing. For example, steel employment was almost constant in 1988. In February 1988 steel employment was 35,100; in February 1989, steel employed 35,200 workers. However, the average work week was 43.3 hours in February 1988 but dropped to 41.7 hours in 1989. Thus in terms of full-time equivalents (FTE), steel employment declined from 37,990 to 36,690. At present Northwest Indiana steel mills operate at 92.8% capacity (very close to attainable full capacity of 93%). Employment is not expected to rise; instead the work week will increase as the busy second quarter rolls on.

## Terre Haute

Marvin Fischbaum

*Professor of Economics, Indiana State University*

Six months ago the prospect of a number of favorable developments, including likely expansion at Evergreen Express and Hercules, and the possible selection of Terre Haute for a BASF paint plant, led to speculation that the Terre Haute economy might at least be coming out of its protracted stagnation. While the intervening period has been relatively quiet, most news has served to cloud the prognosis.

Terre Haute did land the expansion of polycarbonate film facilities at Hercules, but elsewhere prospects have soured. Evergreen Express expanded to daytime operations, but only for the Christmas season. Since then the Post Office demurred from renewing the Evergreen contract, and announced instead an open competition that has attracted at least six bidders. The economy stands to lose close to 200 mostly part-time jobs and one of the very few new businesses attracted to the area in recent years. Britt Airlines ended its existence as the largest independent commuter airline, and although few of its flights served Terre Haute, the system was administered and the fleet was maintained here. Its sale led to the loss of close to 100 quality jobs. At least a similar number of jobs went when the Brown Group sold its Meis division to Elder-Berman. The chain of Meis fashion department stores and The Bottom Half specialty shops had operated, almost autonomously, out of headquarters in Terre Haute. Now these managerial functions will be consolidated with those of Elder-Berman at Dayton, Ohio.

The above is not to imply that the local economy has fallen out of bed. Employment data exhibits continuing strength. The Indiana Department of Employment and Training Services no longer releases seasonally adjusted measures of unemployment. In recent years Terre Haute experienced sharp peaks in unemployment in January and February. The loss of manufacturing jobs, especially from J. I. Case and Alcan Aluminum, has undoubtedly attenuated that peak. Still, reported Vigo County unemployment rates of 6.0% for January and February, and 5.6% for March, would be consistent with an annual average unemployment rate of 5.4% or better.

There have been other signs of a strengthening job market. Establishment employment has improved modestly on a year-to-year basis, rising 700, or 1.3%, between March 1988 and March 1989. Help wanted advertisements in the local newspaper were somewhat more numerous, and, as the college year ended, help wanted signs cropped up at fast food places around town. The gain in establishment employment continued, however, to be concentrated in such low-wage sectors as retail trade and health services.

Manufacturing employment extended its decline, and in March constituted only 18% of the total.

Since January 1988 the state has provided metropolitan area data on average hours and average gross earnings per week in manufacturing. These numbers are apt to be more volatile than data on employment and unemployment, but they may also respond more quickly to changing economic conditions. As markets soften, employers may initially reduce hours of work. The quit rate then is likely to fall, pushing unemployment down, and putting further pressure on hours of work. Only after a lag will the layoff rate, and hence the overall unemployment rate, rise. In March of 1989 the manufacturing work week averaged 41.0 hours, down 3% from level of the previous March. The average manufacturing wage fell 4% to $393.60, as hourly wages also dropped 1%. That the local wage rate fell, rather than match the statewide increase of 3%, probably reflected in part a loss of overtime, and in part a loss of high-wage jobs in the primary metals industry.

Real estate activity continued to increase through the first quarter of 1989. The value of residential building permits in the twelve months ending March 1989 rose 25% over the preceding twelve-month period. For nonresidential construction the increase was 125%. In the first quarter of 1989, the number of residential properties sold through Terre Haute Multi-list rose 24% over the first quarter of 1988. The average selling price, though, fell by almost 5%. It seems unlikely that either building permits or resale activity will continue upward momentum through the second quarter.

The big issue remains the matter of BASF. It appears that of the three sites tested for the facility, only Terre Haute met the requirement of having an impermeable clay cap to preclude leakage of toxic wastes into the aquifer, and BASF clearly wants to obtain the site from the city. Opposition to BASF has grown, though, and it includes an alphabet soup of citizen groups. The matter as to whether due process was followed in creating the industrial park, and therefore whether the City of Terre Haute has the right to sell the site to BASF, is now in litigation. The new facility would, according to BASF, bring at least 500 relatively well-paying jobs to the Wabash Valley and provide much needed impetus to regional economic development. The new facility would, according to opponents, degrade air and water and thereby increase associated health risks. Both sides of course are right; most economic activity degrades the environment. An economist might wish to be able to rank facilities in terms of the trade-off; for example, local value added per man-year of reduced life expectancy. Much of the industry presently in the Wabash Valley processes chemicals. BASF would differ from many of these primarily in that as a new plant it would be subject to more stringent EPA regulation.

## Evansville

**Maurice Tsai**

*Professor of Economics, University of Evansville*

The Evansville economy concluded its 1988 year with a growth rate of 1.4%, higher than the originally predicted 0.9% (see the **Table**). The manufacturing sector grew at 2.6%, also better than the original forecast. Trade and services continued to be the strongest component of the regional economy, posting a 3.9% increase. The construction sector continued to decline from its 1986 peak, as the Lloyd Expressway and a new airport terminal were completed. Transportation activities rose by 0.6% compared to a decline of 1.4% in 1987. The financial sector was down 1.5%, still feeling the adverse impacts of the 1987 stock market crash. Area employment increased by 2.9%, the biggest increase in the last three years. Unemployment ended at 5.5% in December, 0.2% above the national rate but 0.4% below the state level. In short, 1988 was a year of slow growth.

*In the second half of 1989, trade and services will lead the remaining sectors in the region; all sectors will grow with the exception of construction. A 2.0% growth is expected for the entire year.*

The area economy in the first quarter of 1989 stayed at the same level as it ended the fourth quarter of 1988. Manufacturing, finance, and employment went below the levels of the previous quarter, while the trade and services sectors and construction improved, offsetting the losses in other sectors. The second quarter will be about the same as in the first quarter. In the second half of 1989, trade and services will lead the remaining sectors in the region; all sectors will grow with the exception of construction. A 2.0% growth is expected for the entire year. Thus 1989 will not be a fast growth year, due partially to the restrictive monetary policy by the Federal Reserve. The area employment will

**Table**
**Evansville Area Business Index (1977=100)**

| | *Industrial Production* | *Trade & Services* | *Construction* | *Transportation* | *Finance* | *Employment* | *Composite Index* |
|---|---|---|---|---|---|---|---|
| *Quarterly* | | | | | | | |
| 1988:1 | 122.93 | 117.84 | 116.96 | 99.88 | 108.38 | 110.73 | 117.20 |
| 1988:2 | 121.49 | 119.24 | 117.23 | 98.19 | 107.03 | 110.97 | 117.09 |
| 1988:3 | 125.61 | 119.61 | 114.68 | 98.90 | 107.70 | 113.41 | 118.71 |
| 1988:4 | 124.99 | 122.15 | 113.31 | 97.33 | 110.35 | 115.58 | 119.86 |
| 1989:1 | 123.48 | 123.23 | 121.06 | 99.32 | 107.07 | 113.65 | 119.87 |
| 1989:2 | 121.99 | 124.15 | 124.85 | 98.57 | 107.34 | 111.70 | 119.57 |
| *Annual* | | | | | | | |
| 1985 | 113.42 | 108.87 | 108.70 | 99.16 | 105.29 | 106.82 | 109.44 |
| 1986 | 116.92 | 110.70 | 174.44 | 99.48 | 109.91 | 107.36 | 117.24 |
| 1987 | 120.57 | 115.24 | 131.46 | 98.04 | 109.98 | 109.52 | 116.58 |
| 1988 | 123.76 | 119.71 | 115.54 | 98.58 | 108.38 | 112.67 | 118.22 |
| 1989 | 124.57 | 125.36 | 115.52 | 98.78 | 108.17 | 114.65 | 120.56 |
| 1990 | 130.73 | 130.52 | 100.24 | 100.54 | 108.48 | 116.73 | 123.56 |
| *Annual Growth Rates (%)* | | | | | | | |
| 85/84 | -1.4 | 2.7 | 4.9 | 4.3 | -0.8 | 2.9 | 1.4 |
| 86/85 | 2.3 | 1.7 | 60.5 | 0.3 | 4.4 | 0.5 | 7.1 |
| 87/86 | 3.9 | 4.1 | -24.6 | -1.4 | 0.1 | 2.0 | -0.5 |
| 88/87 | 2.6 | 3.9 | -12.1 | 0.6 | -1.5 | 2.9 | 1.4 |
| 89/88 | 0.7 | 4.7 | 0.0 | 0.2 | -0.1 | 1.8 | 2.0 |
| 90/89 | 4.9 | 4.1 | -13.2 | 1.8 | 0.3 | 1.8 | 2.5 |

*1989 figures estimated; 1990 figures projected.*
*Source: School of Business, University of Evansville.*

improve by 1.8% and the area unemployment will remain around 5.5%. The Evansville economy has lost some jobs through closing or reduction of major firms in the last several years. However, the entries of new, medium-sized firms have offset these losses. The net increase in employment came mainly from expansions of existing firms in trade and services. This explains the slow employment growth in Evansville over the past few years.

The coming year, 1990, should be a better year than 1989. Unless the nation falls into a recession, the regional economy should grow at 2.5%, with the manufacturing and trade and services sectors spearheading the growth.

## Jeffersonville-New Albany (Louisville Area)

**Fay Ross Greckel**

*Professor of Economics, Indiana University Southeast*

The Louisville area economy expanded at a moderate pace in 1988, although somewhat less vigorously than in 1987. In some sectors growth accelerated in the first quarter of 1989, but the prognosis for the year as a whole is for moderate growth once again, with another slowing of the pace of expansion.

Employment in the metropolitan area increased by some 13,000 jobs in 1988—about the average number of jobs added in recent years, but less than in 1987. (A much higher increase was reported in this column last December, but the Louisville Office of Employment Services recently published revised employment statistics for 1988, sharply reducing their previous figures.) As **Table 1** indicates, manufacturing employment crept upward for the second year in a row, and that trend continued in the first quarter of 1989. The increase in manufacturing jobs was divided fairly equally between durable and nondurable goods industries.

**Table 1**
**Louisville Area Employment and Unemployment, 1985-891 (in 1000s)**

| | *Total Nonfarm Employment* | *Manufacturing Employment* | *Nonmanufacturing Employment* | *Unemployment Rate (%)* |
|---|---|---|---|---|
| ***Louisville Metropolitan Area*** | | | | |
| *Annual* | | | | |
| 1985 | 410.8 | 87.0 | 323.7 | 7.9 |
| 1986 | 421.2 | 86.2 | 335.1 | 7.1 |
| 1987 | 437.4 | 87.1 | 350.3 | 6.9 |
| 1988 | 450.8 | 87.9 | 362.8 | 6.3 |
| *Quarterly* | | | | |
| 1988:1 | 448.5 | 87.9 | 360.7 | 6.1 |
| 1988:2 | 449.6 | 88.0 | 361.5 | 6.5 |
| 1988:3 | 450.3 | 87.9 | 362.3 | 6.1 |
| 1988:4 | 453.8 | 87.7 | 366.0 | 6.5 |
| 1989:1 | 459.9 | 88.3 | 371.6 | 5.6 |
| ***Clark, Floyd, and Harrison Counties*** | | | | |
| *Annual* | | | | |
| 1985 | 53.4 | 13.1 | 40.3 | 8.1 |
| 1986 | 55.6 | 13.2 | 42.5 | 6.5 |
| 1987 | 59.3 | 13.4 | 45.9 | 5.9 |
| 1988 | 59.8 | 13.5 | 46.3 | 5.7 |
| *Quarterly* | | | | |
| 1988:1 | 60.4 | 13.7 | 46.7 | 5.0 |
| 1988:2 | 60.0 | 13.5 | 46.5 | 4.8 |
| 1988:3 | 59.2 | 13.4 | 45.8 | 5.7 |
| 1988:4 | 59.2 | 13.4 | 45.8 | 6.5 |
| 1989:1 | 58.1 | 13.0 | 45.1 | 5.1 |

*1. The employment date refer to establishments located within the area cited; the unemployment data refer to residents of the area. Data are seasonally adjusted.*

*2. Includes Clark, Floyd, and Harrison Counties in Indiana and Jefferson, Oldham, Bullitt, and Shelby Counties in Kentucky.*

*Sources: Indiana Department of Employment and Training Services; Kentudky Cabinet for Human Resources.*

Most of the job growth occurred, as usual, in nonmanufacturing. From the first quarter of 1988 to the first quarter of 1989, service sector employers in the seven metropolitan counties added 10,000 workers to their payrolls, retail establishments and the transportation, communication, and utilities sector added 1,000 workers apiece, and total government employment rose by nearly 1,700 workers. Small employment declines in construction and in the finance, insurance, and real estate sector partially offset these gains. Job growth accelerated in the last quarter of 1988 and the first quarter of 1989.

The new jobs continue to be concentrated in the Kentucky portion of the metropolitan area. Employment in firms located in the Indiana portion (Clark, Floyd, and Harrison counties) declined by about 2,000 workers between the first quarter of 1988 and the first quarter of 1989, despite small employment gains in banking, insurance, and the service sector. Although small job losses occurred in most other sectors, sharper declines were reported in wholesale and retail firms, in motor freight transportation, and at the army ammunition plant in Clarksville. The employment picture should improve in the months ahead as new hiring occurs at Jeffboat and the Census Bureau.

Although fewer jobs were available in the Indiana counties, Clark, Floyd, and Harrison residents were apparently quite successful at finding jobs elsewhere in the area. Table 1 shows that their unemployment rate was consistently lower than that for the Louisville area as a whole. (Readers are cautioned that local unemployment rates are less reliable statistics than the national unemployment rate.) Here, as in other parts of the U.S., the unemployment rate continues to decline, although locally it remains somewhat above the national average.

Despite the reduction in unemployment, many area residents are still finding it difficult to feed themselves and their families. Dare-To-Care supplied 83,600 emergency food allotments in 1988, compared with 76,300 in 1987. The increase is probably due to a combination of factors, including greater awareness on the part of those in need; more repeat requests for assistance (qualified individuals may receive up to four allotments per year); and the fact that a higher percentage of

**Table 2**
**Louisville Area Residential Building Permits, 1986-1989**

*(Number of Dwelling Units)*[1]

| | *Jefferson Co. KY* | *Clark Co.* | *Floyd Co.* | *Harrison Co.*[2] | *4-Co. Total* |
|---|---|---|---|---|---|
| Jan-Dec 1986 | 2634 | 252 | 427 | 122 | 3435 |
| Jan-Dec 1987 | 3169 | 224 | 397 | 157 | 3947 |
| Jan-Dec 1988 | 2697 | 341 | 376 | 148 | 3573 |
| Jan-Apr 1986 | 734 | 53 | 103 | 56 | 946 |
| Jan-Apr 1987 | 1816 | 72 | 127 | 50 | 2065 |
| Jan-Apr 1988 | 601 | 64 | 141 | 46 | 852 |
| Jan-Apr 1989 | 649 | 66 | 152 | 41 | 908 |

*1. Number of residential units for which building permits were issued, including single-family dwellings, apartment units, and condominium units.*
*2. Excluding Corydon.*

*Source: Kentuckiana Regional Planning and Development Agency.*

the current jobs are part-time or low-wage jobs, with few if any benefits, than earlier in the decade.

The overall health of the economy is still evident in the continued strength of single family home construction and of business investment in plant and equipment. Despite a sharp decline in apartment construction, caused by the new tax code and some concerns about possible overbuilding, during 1988 Clark, Floyd, and Harrison counties and Jefferson County in Kentucky issued building permits for only 370 fewer apartment/condominium units and single family homes than in the record-setting year of 1987. As **Table 2** shows, residential construction was higher in the first four months of this year than in 1988, but that may be simply a result of the milder winter.

The Louisville Chamber of Commerce tally of announced plans for major investments in plant and equipment totaled a record $1.2 billion in 1988—up from $600 million in 1986 and $1.1 billion in 1987. In 1987 Ford's announcement of a $500 million expansion of its light truck plant resulted in an emphasis on industrial expansion. Commercial investment led the way in 1988, with 570 commercial firms announcing a record $951 million in new capital projects that should eventually add 23,000 jobs to the area's economy. Another 3,000 jobs are anticipated through the capital projects announced by 157 industrial firms. Many additional projects have already been announced in the first few months of 1989.

These developments are occurring both in the central business district and in outlying areas. Downtown Louisville continues its interesting mix of renovation/preservation—such as the national headquarters of the Presbyterian Church, completed last year—and new construction. An architecturally innovative 23-story office building is nearing completion, construction is about to start on another office tower a few blocks away, and at least two others are in the planning stages.

Renewed emphasis is being placed on riverfront development, not only in Louisville, but also in Jeffersonville, Clarksville, and New Albany. In fact, Jeffersonville is in the process of choosing between two very ambitious proposals for development of the riverfront area between the Clark and Kennedy bridges.

Despite the higher interest rates, Louisville's multiple listing realty sales reached record levels in 1988, for the second year in a row. The number of properties sold increased 30% and the dollar volume of sales increased 35%. Sales volume in the first quarter of 1989 was about 20% greater than in the first quarter of 1988. While the Southern Indiana Board of Realtors reported a more modest 4% increase for 1988, its reported sales during the first two months of 1989 were 26% ahead of the same months of 1988.

Local residents seem to be putting their money into new houses rather than into new cars. Sales of new cars declined nearly 10% in 1988, although truck sales rose slightly. But car sales in the first quarter of 1989 were 18% below the number sold 12 months earlier, and truck sales were down 11%.

The declining car purchases may be, in part, a local reflection of the decreased consumer confidence reported nationally. That more cautious attitude will probably keep both new car sales and retail sales down in the months ahead. However, continued vigor in several other sectors, including housing and nonresidential construction, as well as the likelihood of at least several more months of expansion for the national economy, will keep the local economy on a path of slow to moderate growth. Although employment in the Indiana counties should stabilize in the second half of the year, employment growth in the metropolitan area as a whole is likely to be slower than in 1988.

## Fort Wayne

**Thomas L. Guthrie**

*Associate Professor of Business and Economics and Director, Community Research Institute, Indiana University Purdue University Fort Wayne*

The data are sketchy and preliminary, but the Fort Wayne metro area economy appears to be on the defensive for the first time since 1982.[1] The original forecast (December 1988 *IBR*) of an employment increase of 2% to 3%—4,000 to 6,000 jobs—in 1989 still appears to be attainable.

Through March, seasonally adjusted employment already had increased 3,300; but it then fell a disturbing 2,200 in April. Assuming these relative changes are not eliminated by subsequent data revisions, they suggest that employment lacked the seasonal bounce experienced in previous Aprils. The interesting question that needs to be answered is, "Did the seasonally adjusted drop in employment result from a lack in demand for additional jobs or was it the result of labor shortages?" (Area media have already focused attention on the lack of teenagers to fill part-time and "summer" jobs.)

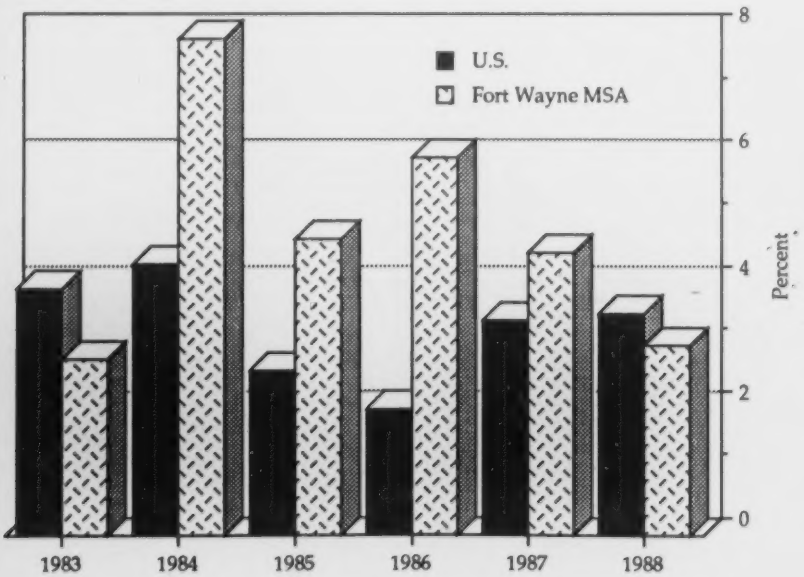
Other economic data, not subject to revision, suggest that lack of demand may be the primary culprit. Use of electricity by industry has been decreasing, and help wanted advertising has also eased the last two months.

Furthermore, it is difficult to identify sectors of the national economy that are likely to contribute to growth in the Fort Wayne area economy through the remainder of 1989. After the umpteenth round of rebates and below-market financing rates, it appears that the well has finally run dry for the auto industry. The Fort Wayne area economy is closely tied to the fortunes of the auto (and truck) industry. The defense industry, another important contributor to the area economy, remains on the defensive, a hostage of the federal budget deficit, Gramm-Rudman-Hollings, and the massive build-up in defense expenditures during the years of the Reagan administration. Residential construction in the Fort Wayne area has been trending downward for almost two years, and it now appears that commercial construction measured in dollar terms peaked near the end of 1988.

Hope, albeit modest, for economic growth through the remainder of 1989 centers around increased exports and continued growth in capital goods orders. The precise linkage of the Fort Wayne area economy to exports and capital goods is not known, but the remainder of 1989 is likely to provide substantial information.

Finally, it should be noted that the Fort Wayne area economy did not carry as much momentum in 1989 as noted in the initial forecast (December 1988 *IBR*). As a result of revisions, the employment gain in 1988 was essentially halved. Consequently, the string of four successive years of employment growth above that of the U.S. was broken (see the **Figure**).

**Figure**
**Percentage Change in Payroll Employment**
**U.S. and Fort Wayne MSA**




*Source: U.S. Department of Labor and Indiana Department of Employment and Training Services.*

1. The Fort Wayne metro area consists of Allen, DeKalb, and Whitley counties.

## Columbus

**Patrick M. Rooney**

*Assistant Professor of Economics, Indiana University-Purdue University at Indianapolis, Columbus*

The local employment picture in Columbus is showing signs of weakening. The number of persons employed is up 3% from a year ago, but it is down 4% from the fourth quarter of 1988. More troubling is the fact that the number of persons unemployed, the unemployment rate, as well as continued and new employment insurance claims have increased between the fourth quarter of 1988 and the first quarter of 1989. Only our index of help wanted advertising has shown improvement between both the first quarter and the fourth quarter of 1988 and the first quarter of 1989.

This is consistent with the historical relationship between the local economy and the national economy. When the national economy is growing, Columbus grows faster; conversely, when the national economy slows, the Columbus economy decelerates even more quickly. This occurs because the durable goods industry as a whole is pro-cyclical. When the economy begins to grow, there is pent-up demand for durable goods, so durable goods manufacturing accelerates at a faster rate than the economy overall. When the economy slows down, some individuals and business delay purchases of durable goods because either their income has fallen or they fear that it may fall. Since much of the employment in Columbus is based upon durable goods manufacturing, our local economy tends to follow changes in the national economy rather than changes in the state economy. This is exemplified by the unemployment rate. In the first quarter of 1989 the national unemployment rate jumped from 5.0% to 5.3%. Concurrently, the unemployment rate in Columbus jumped from 4.3% to 5.4%.

Similar signs of a weakening economy are indicated by the housing market data. Overall, housing construction and single-family new starts declined both in terms of number of permits issued and estimated value of those permits. There were substantial declines both from fourth quarter 1988 and from a year ago (first quarter 1988). While average costs are up, they are up only 1-2%, a much smaller increase than we have seen in recent years. Similar price weakness is evident in residential real estate. The average market price of sold listings is up only 2% from a year ago.

Both new and used car markets grew more than 20% from the fourth quarter of 1988 to the first quarter of 1989, but they are up only slightly from a year ago. In addition, taxable sales in Bartholomew County grew only 2.0% from 1987 to 1988 versus a 7.1% increase statewide (the latest data available).

**Table**
**Columbus Area Data**

| | *1989:1* | *1988:4* | *% Change* | *1988:1* | *% Change 1Q: 1988-89* |
|---|---|---|---|---|---|
| *Employment Data* | | | | | |
| Number of Persons Employed | 29277 | 30530 | -4 | 28467 | 3 |
| Number of Persons Unemployed | 1680 | 1350 | 24 | 1567 | 7 |
| Unemployment Rate | 5.4 | 4.3 | 26 | 5.3 | 2 |
| Continued Employment Insurance Claims—Columbus | 2486 | 1121 | 122 | 2643 | -6 |
| New Employment Insurance Claims—Columbus | 396 | 266 | 49 | 398 | -1 |
| Help Wanted Advertising (1987=100) | 134 | 131 | 2 | 121 | 11 |
| *Housing Construction Data* | | | | | |
| Estimated Value of Permits Issued (000s) | 3085.3 | 6825.5 | -55 | 3692 | -16 |
| Number of Permits Issued | 37 | 131 | -72 | 45 | -18 |
| Average Value Per Permit | 83.4 | 52.1 | 60 | 82 | 2 |
| Single Family New Starts: | | | | | |
| Construction Costs (000s) | 2935.3 | 5517.4 | -47 | 3750 | -22 |
| Number of Permits | 35 | 56 | -38 | 45 | -22 |
| Average Costs (000s) | 83.9 | 98.5 | -15 | 83.3 | 1 |
| *Residential Real Estate Data* | | | | | |
| Sold | 164 | n/a | | 175 | -6 |
| Average Days Listed | 123 | n/a | | 133 | -8 |
| Average Market Price | 61894 | n/a | | 60387 | 2 |
| *Sales Data* | | | | | |
| New Car Sales | 478 | 378 | 26 | 469 | 2 |
| Used Car Sales | 2501 | 2083 | 20 | 2510 | 0 |

### Local Forecast

As a durable goods manufacturing-based economy, Columbus is greatly affected by interest rate fluctuations. If the Federal Reserve Board can continue to walk the knife's edge of growth between the undesirable alternatives of inflation and recession, then we can expect to see continued growth locally. While this growth will be slower than in the past five years, this is the preferrable outcome. If the Fed is unable to traverse this path alone, and if the administration and Congress continue to refuse to actively resolve the budget deficit they created and the resulting problems, then we can expect rising interest rates, which will further decrease the local construction and housing market. In addition, as interest rates increase the demand for U.S. dollars will increase, thereby making our manufactured goods more expensive and reducing overall demand.

Finally, given the continued attempts of local employers to become more competitive internationally, we should anticipate some softening of purchasing power by labor. This has already been reflected, to some degree, in the slowdown in taxable sales, as well as in the deterioration of the local construction market. While this weakening of labor's income is not a preferred outcome, it is certainly better than having no jobs available. On the other hand, the lost income from such restructuring efforts is being offset, to some degree, by the promise of over 1,000 new jobs from firms expanding or starting up in Columbus in 1989. Furthermore, the significant increase in leasable retail space available (estimates range up to a doubling of currently available retail space) in the next 12 months should provide additional job opportunities. The additional space will not necessarily be filled immediately, but it does provide another indicator that outside investors still see Columbus and Bartholomew County as attractive sites for investment.

## South Bend/Mishawaka-Elkhart/Goshen

John E. Peck

*Professor of Economics and Director, Bureau of Business and Economic Research, Indiana University at South Bend*

This mid-year assessment of the economic condition of the South Bend/Mishawaka and Elkhart/Goshen communities is based on an analysis of the latest available economic indicators for the area tracked by Indiana University at South Bend's Bureau of Business and Economic Research. A look at the indicators—particularly those relating to local employment—suggests that both communities have begun to experience some slowing in the pace of economic activity, as had been expected in the 1989 area forecast (*IBR*, December 1988).

The accompanying **Table** summarizes the various available indicators of local economic activity. These figures are seasonally adjusted and, with the exception of the unemployment rates and real estate data, are index numbers expressed as a percentage of base year values. It is noted that comparative indicators along with percentage changes are given for January and February, 1989. To highlight longer term trends, the same figures are also given for February 1988.

### South Bend/Mishawaka

Nonagricultural employment in the South Bend/Mishawaka area increased 3.3% from February 1988 to February 1989. In absolute terms, 3,700 more persons were employed in February 1989 than in February 1988. While such growth is welcomed locally, it shows a softening of about one percentage point from the gain realized from 1987 to 1988. The 0.2% decline from January to February 1989 marks the first seasonally adjusted fall in the employment index in six months. The unemployment rate increase was more the result of an increase in the size of the work force than an increase in unemployment. The softest sector of the economy continues to be the transportation equipment sector of manufacturing—coming mostly from AM General layoffs and the continuing phaseout of Bendix jobs at its Energy Controls Division. On the positive side, the nonmanufacturing employment indicator, at 166.3, reached an all-time high.

Several other South Bend/Mishawaka indicators reflect similar softness in February to the short-term employment figures. Energy sales, new trucks, and housing permit values were all down marginally. On the other hand, the number of housing permits issued and the average days that resale homes were listed gave positive indications on both the month-to-month and year-to-year comparisons. Housing activity continues to be a strong economic force in the local community.

### Elkhart/Goshen

February employment conditions in Elkhart/Goshen showed the same weakness as was found in South Bend/Mishawaka, with all three indicators down by fractions of 1%. Similarly, year-to-year comparison portray a much stronger economic base. Yearly gains in both manufacturing and nonmanufacturing suggest a very positive situation through the first

**Table**
**Area Economic Indicators**

| | South Bend/Mishawaka | | | | | Elkhart/Goshen | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *February 1989* | *January 1989* | *Percent Change* | *February 1988* | *Percent Change* | *February 1989* | *January 1989* | *Percent Change* | *February 1988* | *Percent Change* |
| Employment Data | | | | | | | | | | |
| Establishment Employment[1] | | | | | | | | | | |
| Nonagricultural Employment | 132.2 | 132.4 | -0.20% | 128.0 | 3.30% | 201.5 | 202.6 | -0.40% | 192.6 | 4.60% |
| Manufacturing Employment | 72.6 | 72.9 | -0.40% | 74.1 | -2.00% | 185.2 | 185.9 | -0.40% | 175.6 | 5.50% |
| Nonmanufacturing Employment | 166.3 | 165.8 | 0.30% | 158.7 | 4.80% | 225.4 | 226.1 | -0.30% | 217.8 | 3.50% |
| Unemployment Rate | 4.8 | 4.6 | n/a | 4.7 | n/a | 4.1 | 4.1 | n/a | 4.1 | n/a |
| Help Wanted Advertising[2] | 135.6 | 151.4 | -10.40% | 136.8 | -9.00% | 159.2 | 163.7 | -2.70% | 144.1 | 10.50% |
| Utilities[3] | | | | | | | | | | |
| Industrial Electricity Sales | 158.9 | 167.2 | -5.00% | 170.0 | -6.50% | 231.1 | 225.7 | 2.40% | 216.2 | 6.90% |
| Commercial Gas Sales | 93.0 | 102.3 | -9.10% | 100.6 | -7.60% | 92.3 | 98.9 | -6.70% | 105.7 | -12.70% |
| Industrial Gas Sales | 49.7 | 53.5 | -7.10% | 71.4 | -30.40% | 64.5 | 63.3 | 1.90% | 70.3 | -8.30% |
| Retail Car and Truck Sales[4] | | | | | | | | | | |
| New Passanger Car Sales | 85.0 | 82.0 | 3.70% | 78.0 | 9.00% | 96.7 | 80.5 | 20.10% | 92.6 | 4.40% |
| New Truck Sales | 257.6 | 263.4 | -2.20% | 275.5 | -6.50% | 147.9 | 142.4 | 3.90% | 140.3 | 5.40% |
| Housing Construction[5, 6] | | | | | | | | | | |
| Estimated Value of Permits | 651.9 | 717.4 | -9.10% | 821.8 | -20.70% | 759.5 | 488.9 | 55.30% | 517.3 | 46.80% |
| Number of Permits Issued | 136.9 | 123.1 | 11.20% | 164.1 | -16.60% | 173.7 | 126.5 | 37.3 | 121.2 | 43.3 |
| Average Value Per Permit | 499.4 | 538.5 | -7.30% | 521.7 | -4.30% | 389.8 | 453.2 | -14.00% | 381.4 | 2.20% |
| Residential Real Estate Data | | | | | | | | | | |
| Number of Active Listings | 995.0 | 981.0 | 1.40% | 1028.0 | -3.20% | 1168.0 | 1151.0 | 1.50% | 1155.0 | 1.10% |
| Closed Sales | | | | | | | | | | |
| Average Days Listed | 60.0 | 66.0 | -9.10% | 62.0 | -3.20% | 71.0 | 70.0 | 1.40% | 80.0 | -11.30% |
| Average Market Price | $64,672 | $62,703 | 3.10% | $58,874 | 9.80% | $63,107 | $62,955 | 0.20% | $60,421 | 4.40% |
| % of Sale to List Price | 95.0 | 95.0 | 0.00% | 94.7 | 0.30% | 95.0 | 95.0 | 0.00% | 94.0 | 1.10% |

*1. For South Bend, 1969 = 100; for Elkhart, 1967 = 100.*
*2. For South Bend, 1967 = 100; for Elkhart, 1984 = 100.*
*3. 1967 = 100.*
*4. For South Bend, 1967 = 100.*
*5. For South Bend, 1967 = 100, for Elkhart, 1970 = 100.*
*6. St. Joseph County excluding cities of South Bend, Mishawaka, Osceola, Walkerton and New Carlisle. Elkhart County excluding cities of Elkhart, Goshen, Nappanee and Millersburg.*

quarter of 1988. In Elkhart County, 5,300 more persons were at work in February 1989 than in February 1988, with 2,700 of these finding jobs in manufacturing and 1,300 of the 2,700 added in transportation equipment. The Indiana Department of Employment and Training Services reported recently that in 1988, Elkhart employment grew by a larger percentage than 11 of the state's other 12 metropolitan areas. On the other hand, the 4.6% year-to-year gain was two percentage points lower than that experienced from February 1987 to February 1988.

Nearly all of Elkhart County's remaining indicators moved positively in February. Energy (with the exception of commercial gas sales), autos, trucks, and housing activity of all kinds advanced from January levels and from February 1988. The continuation of vigorous activity in terms of new housing permits issued—with the index up 43.3% from February 1988—is particularly impressive.

**Outlook**

With respect to an outlook for the Michiana area, we are particularly interested in the course of the national economy overall. As goes the U.S. as a whole, so goes St. Joseph and Elkhart counties. As has been noted throughout this issue of the *IBR*, forecasters continue to predict a softening of the national economy during the final three quarter of the year. If that view turns out to be accurate, we can expect to see a parallel slowing locally—especially in manufacturing—with employment growing in South Bend/Mishawaka by 1-2% and in Elkhart/Goshen by 3-4%.

## Muncie

**Robert Jost**

*Professor of Economics, Ball State University*

The growth of real GNP for the U.S. economy has slowed significantly from the heady 5% rate of 1987 to a more modest 2.8% in 1988. The reported 5.5% real rate of growth for first quarter 1989 has now been revised downward to 4.3% and does not reflect a reversal of this slowing, for roughly half of the gain is derived from a one-time rebound in farm output following the drought. Given these facts, real growth during the second quarter is likely to be under 2%. While there is still some ambiguity in the nation's economic indicators, there are sound reasons for expecting slower growth into 1990. Foremost among these reasons are the erosion of consumer purchasing power as a consequence of the sharp rise in inflation, slower home sales reflecting high interest rates, and continued decline of net exports. Whether or not the economy slips into a recession in late 1989 or 1990 may well be determined by how well the Federal Reserve policy responds to conditions that unfold during the balance of 1989.

Although evidence of an economic slowdown for the nation continues to grow, there is little evidence of an economic slowdown in Indiana or Muncie at this point in time. If we look at manufacturing employment in Indiana *less Indianapolis* (where it continues to slowly decline), we can see that it has constituted a major source of Indiana growth since the end of 1986. However, this resurgence of manufacturing growth since 1986 has left Muncie untouched where manufacturing employment has remained flat. On the other hand, in Anderson, where there is much heavier reliance on motor vehicle parts production, manufacturing employment has declined 8%. Thus, Indiana appears to be experiencing substantial change in the composition and geographical distribution of its manufacturing industries. In nonmanufacturing employment, Muncie enjoyed a 12% increase since 1985 and Anderson experienced a 10% gain—both consistent with the state and national trend toward growth of the service sector. Muncie and Anderson had equal establishment employment totals of 47,000 at the beginning of 1985, but by April of 1989, Muncie's establishment employment exceeded Anderson's by 3,500 workers. Muncie's greater economic diversity and the presence of Ball State University probably account for much of this relative gain.

Unemployment figures for Muncie registered a new post '81-'82 recession low of 4.2% in April, but this figure reflects new methods of computation in Washington that warrant much more than the usual degree of skepticism with which one treats unemployment data. Certainly any euphoria generated by this low unemployment number should be tempered by realization that the Muncie MSA has lost more than 6% of its population since 1980, and at least one advance indicator of population change suggests that the population drain has not fully subsided.

Again, evidence of a slowing Indiana economy is hard to come by, but the fact that the average hours worked in manufacturing has declined more than one full hour from the previous year's levels could be a harbinger of slower growth ahead. Paradoxically, this indicator shot sharply upward in Muncie, but this reflects less an exuberant economy than specific skills shortages in booming basic material-producing industries.

*Much of the building of multiple family units the past few years has been large apartment complexes marketed to Ball State University students.*

There were 24% fewer new dwelling units completed in 1988 than in 1987. Deed recording for the first quarter of 1989 exceeded those for the comparable quarter in 1988, but currently there appears to be a softening in the housing market as higher interest rates make housing less affordable. Much of the building of multiple family units the past few years has been large apartment complexes marketed to Ball State University students. These large apartment complexes have skyrocketed population densities in older, established neighborhoods contiguous to the University, severely taxing the limited infrastructure of the area and exacerbating tensions between students and families domiciled in the area.

## Richmond-Connersville-New Castle

**Ashton I. Veramallay**

*Director, Center for Economic Education, Indiana University East*

The Richmond-Connersville-New Castle (RCNC) area can expect continued economic growth at a slow pace for the rest of 1989. This means that as the national economy slows down, the effects will be felt at the local level. Some of the reporting firms in my survey are already experiencing, in varying degrees, the effects of current economic conditions.

Manufacturing employment will decline as the transition continues toward a service/information economy. Firms associated with the transportation industry will experience the side effects of a decline in automobile sales. It is important to note that RCNC is ultrasensitive to changes in the transportation sector, because most of its manufacturing activity is connected with this sector. Higher interest rates will dampen not only consumer demand but also affect business investment in plant and equipment.

A too-restrictive monetary policy by the Fed is likely to precipitate a recession. Prudent action is therefore necessary to sustain the current expansion without igniting inflation. Recent increases in energy and food prices will edge the consumer price index upwards. Producer prices for crude and intermediate goods, along with employment costs, have also been rising. The indications are for continued acceleration of inflation. Inevitably, consumers will see a slight price increase for a typical basket of goods and services, but the increase will be tolerable barring other shocks to the national economy.

On the bright side, the retail sector is expected to follow normal seasonal patterns. Employment creation will be positive, as the demand for goods and services of various kinds increases. Employment opportunities in fast food establishments, grocery stores, health care, education, insurance, and finance are growing as entrepreneurs start up small businesses. Both producer and consumer confidence is relatively stable, and this augurs well for the next two quarters in 1989.

With respect to tourism as an integral part of the service sector, the "Come On IN" slogan is unlikely to effectively promote Indiana. This slogan, like the other two, "Wander Indiana" and "Back Home Again," portrays a "prodigal son's image" of our state, which is in need of a positive sense of direction. The state is at the crossroads of self-realization, and so is RCNC. Massive infusion of external investment is not possible in the foreseeable future, given the fierce competition for such investment. Consequently, RCNC has to aggressively exploit the growth potential from its internal base.

In particular, the development of human capital creates growth and helps reduce the dependency ratio and transfer payments. It also promotes self-reliance and civic pride. Master plans that do not set realistic goals and prepare the citizenry for an increasingly technological and interdependent society eventually end up as futile exercises. Thus, RCNC has to adapt to the structural changes taking place. Otherwise, the consequences will be detrimental to its long-run economic health.

Overall, the prognosis is for slow but continuing economic growth in the short run. There is no recession in the offing, but an inflation watch is advisable.

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# Indiana Business Review

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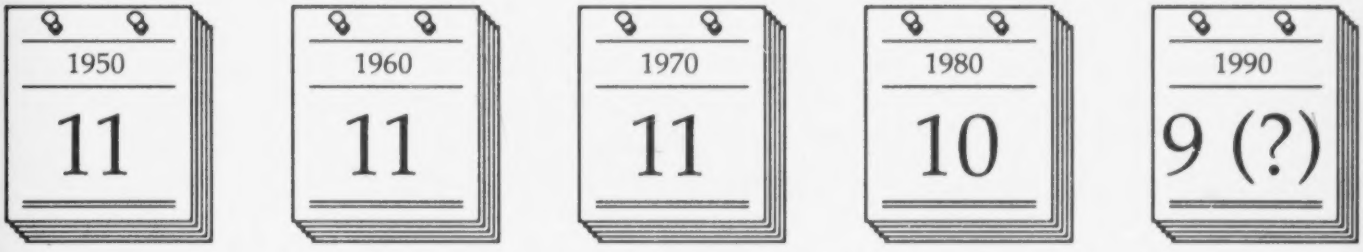
Jerome N. McKibben and Michael A. Gann — **Indiana's 10th Congressional Seat and the 1990 Census: Will History Repeat Itself?**




Leslie P. Singer, Assisted by Joseph Smolar — **The Impact of Wages on Import Penetration; Manufacturing and the Role of Human Capital Widening in Indiana**

# Indiana's 10th Congressional Seat and the 1990 Census: Will History Repeat Itself?

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Jerome N. McKibben and Michael A. Gann

*Chief Demographer and Assistant Demographer, Population Studies Division, Indiana Business Research Center*

By early 1979 Indiana was gearing up for the 1980 Census of the Population along with the rest of the United States. Since the primary function of the census count is the reapportionment of congressional seats, many of the demographic pundits of the day tried to predict which states would gain or lose seats.

Nearly all of these predictions stated that Indiana would not lose its 11th congressional seat. Although it was acknowledged that the population growth of the state had not kept pace with that of the rest of the U.S., projections showed that Indiana would retain a high enough proportion of the national population to keep all 11 of its congressional seats.

When the final results came in, however, Indiana had lost its 11th congressional seat—by only 7,600 people. That is, if 8,000 more Hoosiers had been counted, Indiana would have kept its 11th seat and New York would have lost its 34th seat.

What went wrong? Were the projections inaccurate? Was the census count in error? Were the congressional seats apportioned incorrectly? Could it happen again in 1990?

The purpose of this article is to answer these questions by examining the results of the 1980 census and the reapportionment procedure. This information can then be used to help give a more accurate prediction of what the 1990 census results will mean to Indiana.

## Methodology

The decennial census of the population determines the number of people in each of the states. On the basis of this enumeration, apportionment calculations are made to determine the number of representatives to which each state is entitled. According to the Constitution, representatives are to be apportioned to the states "according to their respective numbers, . . . but each state shall have at least one representative" (Article I, section 2, clause 3). However, the framers of the Constitution did not specify a method for this apportionment, nor do they seem to have been aware of the difficulties involved. The 1792 Apportionment Act, known as the Jefferson plan, gave one representative to each state for every 33,000 people and disregarded the fractional remainders. Daniel Webster and others argued that the Jefferson plan discriminated against small states by disregarding the fractional parts no matter what size quota was set per representative. Under Webster's plan an additional representative would be apportioned to any state with a fractional remainder population one-half or more of the set population-per-representative value. A fault in the Webster plan was that the size of the House of Representatives could not be predetermined.

The Vinton plan (named after Representative Samuel Vinton of Ohio) was an apportionment method that used a predetermined number of representatives and a fixed population-to-representative ratio. Under the Vinton plan, the number of representatives was determined, a population-to-representative ratio was derived, representatives were assigned to states equal to their integer multiple of the population-to-representative ratio, and the remaining seats were apportioned to states in order of the largest fractional remainders. A problem with the Vinton plan was what was known as the Alabama paradox—a situation in

**Table 1**
**Multipliers for the Determination of Priority Values**

| *n* | *Multiplier* |
|---|---|
| 2 | 0.70710678 |
| 3 | 0.40824829 |
| 4 | 0.28867513 |
| 5 | 0.22360680 |
| 6 | 0.18257419 |
| 7 | 0.15430335 |
| 8 | 0.13363062 |
| 9 | 0.11785113 |
| 10 | 0.10540926 |
| 11 | 0.09534626 |
| . . . . . | |
| 55 | 0.01834940 |
| 56 | 0.01801875 |
| 57 | 0.01769981 |
| 58 | 0.01739196 |
| 59 | 0.01709464 |
| 60 | 0.01680732 |

**Table 2**
**Determination of Priority Values**

| *State* | *1980 Population* | *Number of Representatives* | *Multiplier* | *Priority Value* |
|---|---|---|---|---|
| California | 23,668,000 | 2 | 0.70710678 | 16735800 |
| | | 3 | 0.40824829 | 9662420 |
| | | 4 | 0.28867513 | 6832363 |
| New York | 17,558,000 | 2 | 0.70710678 | 12415380 |
| | | 3 | 0.40824829 | 7168023 |
| | | 4 | 0.28867513 | 5068558 |
| Indiana | 5,490,000 | 2 | 0.70710678 | 3882016 |
| | | 3 | 0.40824829 | 2241283 |
| | | 4 | 0.28867513 | 1584827 |

which a state could actually lose a representative if the size of the House of Representatives were increased.

Research in apportionment methods continued until 1941, when Congress adopted the method of equal proportions—a method that "satisfies the oft-expressed view of Congress that the average number of persons per congressional district should be as nearly equal as possible among the States, and will also satisfy the inter-State application of the 'one man, one vote' principle."

Suppose $P_X$ represents the population of state X and $R_X$ represents the number of representatives apportioned to state X. Then the value $P_X/R_X$ represents the population per representative and the value $R_X/P_X$ represents the representatives per person in state X. Using an ideal apportionment method, the ratios $P_X/R_X$ and $P_Y/R_Y$, population per representative of states X and Y, should be equal; and the ratios $R_X/P_X$ and $R_Y/P_Y$, representatives per person, should be equal. However, it is impossible to achieve this goal in practice. The next best situation, then, would be to minimize the percentage difference between like-valued ratios. This minimization is achieved using the method of equal proportions. This method also has the advantage of not placing any emphasis on larger states over smaller states.

At the heart of the method of equal proportions is a set of multipliers, a sequence of numbers generated from the formula $1/\sqrt{((n-1)n)}$, such as $1/\sqrt{(2x3)}$, $1/\sqrt{(3x4)}$, $1/\sqrt{(4x5)}$. The integer n in the multiplier formula corresponds directly to the number of representatives, or the size of the state's delegation. **Table 1** lists some of the values in the set of multipliers as calculated from the formula. The set of multipliers, the population of each state, and the total number of representatives to be assigned to all of the states (currently set at 435) are the only quantities needed to perform the calculations and assign the representatives to which each state is entitled.

Using the method of equal proportions, assignment of representatives to the states is based upon the ordering of a set of priority values calculated for each state. Each of the state's priority values is the product of the state's population and a value from the set of multipliers. The results of calculating the first three priority values for California, New York, and Indiana are given in **Table 2** and show that, for a given number of representatives, a state with a large population will have a higher priority value than a state with a small population. Recalling that each state is entitled to at least one representative (so that 50 of the 435 seats are preassigned), once the priority values have been calculated, seats 51 through 435 are assigned to the states on the basis of highest to lowest priority value. That is, the state with the highest priority value is assigned the 51st seat, the state with the next highest priority value the 52nd seat, and so forth until all 435 seats have been assigned. A partial listing of the reapportionment based upon the 1980 census is shown in **Table 3**.

**Results**

The Census Bureau's population pro-

**Table 3**
**Priority Value Sequencing and Numbering in Rank Ordering**

| State | Priority Value | Number of Representatives | Rank Order |
|---|---|---|---|
| California | 16735800 | 2 | 51 |
| New York | 12415380 | 2 | 52 |
| Texas | 10061420 | 2 | 53 |
| California | 9662420 | 3 | 54 |
| Pennsylvania | 8389115 | 2 | 55 |
| Illinois | 8080109 | 2 | 56 |
| Ohio | 7635339 | 2 | 57 |
| New York | 7168023 | 3 | 58 |
| Florida | 6891463 | 2 | 59 |
| California | 6832363 | 4 | 60 |
| Kansas | 528606 | 5 | 430 |
| Colorado | 527639 | 6 | 431 |
| Pennsylvania | 527419 | 23 | 432 |
| Florida | 527003 | 19 | 433 |
| Ohio | 526888 | 21 | 434 |
| New York | 524178 | 34 | 435 |
| Indiana | 523451 | 11 | 436 |

**Table 4**
**1980 Apportionment as Projected Before the Census**

| State | Priority Value | Number of Representatives | Rank Order |
|---|---|---|---|
| Massachusetts | 519448 | 12 | 426 |
| Indiana | 518493 | 11 | 427 |
| Maryland | 518191 | 9 | 428 |
| California | 518149 | 44 | 429 |
| Oklahoma | 517415 | 6 | 430 |
| Kansas | 517203 | 5 | 431 |
| Missouri | 514608 | 10 | 432 |
| Texas | 513746 | 26 | 433 |
| Tennessee | 512063 | 9 | 434 |
| Michigan | 510078 | 19 | 435 |
| New York | 509515 | 36 | 436 |

jections for 1980, published in March of 1979, showed that they expected the 1980 population of the United States to be 221,651,000 and of Indiana to be 5,438,000. Given the population level for Indiana and the distribution of the total U.S. population throughout the other states, the assignment of the last 10 representatives as a result of the 1980 reapportionment was projected to be as shown in **Table 4**.

Given these projected results, Indiana had 88,257 people to spare to keep its 11th congressional seat.[1] The many projections of congressional reapportionment made in the late 1970s and the secure feeling in Indiana that we would retain our 11th congressional seat were based upon these calculations.

When the 1980 census was concluded, and the subsequent reapportionment was completed, Indiana had indeed lost its 11th congressional seat. (See Table 3 for the results of the priority value calculations for seats 430 through 436.) Furthermore, the seat was lost by a margin of only 7,625 people.[2]

What happened? The primary reason for this turnaround was that Indiana's population count was not as complete as that of the U.S. as a whole. The 1979 projection of the 1980 U.S. population was 221,651,000. But the actual 1980 census count was 226,546,000, an almost 3% increase over the projected value. In Indiana, the 1979 projection of the 1980 population was 5,438,000; the actual 1980 census count was 5,490,000. This represented an increase of only 1.3% over the projection. The discrepancy between the nation's 3% greater and Indiana's 1.3% greater actual count than projected count served to make Indiana's proportion of the U.S. total population lower than had been expected. Consequently, what had been considered a "safe seat" was lost by a very small margin.[3]

The Census Bureau's 1990 projections for the U.S. and all 50 states have been released. A congressional reapportionment based upon these projected populations would have the results shown in **Table 5**.

The Census Bureau projects Indiana's population at 5,550,000 and

**Table 5**
**Projected Apportionment After the 1990 Census**

| State | *Priority Value* | *Number of Representatives* | *Rank Order* |
|---|---|---|---|
| New Jersey | 585513 | 14 | 426 |
| Indiana | 585021 | 10 | 427 |
| Ohio | 583511 | 19 | 428 |
| New York | 582800 | 31 | 429 |
| North Carolina | 582290 | 12 | 430 |
| Texas | 580799 | 31 | 431 |
| Georgia | 579940 | 12 | 432 |
| Arizona | 578946 | 7 | 433 |
| Kentucky | 577866 | 7 | 434 |
| Minnesota | 577819 | 8 | 435 |
| Pennsylvania | 577098 | 21 | 436 |

**Table 6**
**Projected 1990 Apportionment if Indiana's Relative Performance Matches 1980**

| State | *Priority Value* | *Number of Representatives* | *Rank Order* |
|---|---|---|---|
| Minnesota | 595154 | 8 | 434 |
| Pennsylvania | 594411 | 21 | 435 |
| California | 594084 | 51 | 436 |
| Indiana | 592626 | 10 | 437 |
| Florida | 586924 | 23 | 438 |

the U.S. population at 249,891,000. Given these projections, Indiana would retain its 10th congressional seat by a margin of 68,324 people.

But what would be the fate of Indiana's 10th congressional seat if the 1990 census results were to have the same level of improvement over the 1989 projections as the 1980 census results had over the 1979 projections? A 1.3% increase in Indiana's projected 1990 population would give the state 5,622,000 people. A 3% increase in the projected U.S. population would give the nation a total of 257,388,000 people. If this 3% increase in the nation's total was spread evenly across the other 49 states, the congressional reapportionment calculations would be as shown in **Table 6**.

Given these results, Indiana would fall short of retaining its 10th congressional seat by 16,933 people.

An additional 20,000 people to our census count in 1990 might not seem to be a major issue when it is assumed we have a 70,000 person margin. But it could be devastating if we are in fact 17,000 people short of holding on to our 10th congressional seat.

This brings us to a major misconception about census results: The final count is all that matters. Actually, the primary measurement is the state's proportion of the total U.S. population. In this case, while Indiana's counting more people than projected is a positive factor, not improving as well as the rest of the country makes it less of a positive factor. Thus the short-term victory of an improved census count in the state is more than offset by the long-term effect of a smaller share of the U.S. population.

What are the chances that the U.S. population count will be more complete than Indiana's again in 1990? Probably very good. Many of the states that stand to gain or lose in the upcoming census have committed time, personnel, and money in public awareness programs to address the issue. Also, states with demographic research centers have provided additional resources to assist in pre-census local reviews, post-census local reviews, and the all-important count reviews of the population numbers.[4] Indiana is in the process of developing these programs.

## Implications

Regardless of whether Indiana loses or retains its 10th congressional seat, there will be some dramatic changes in the boundaries of Indiana's congressional districts after 1990 (see the **Figure**). Given the "one man, one vote" provision for drawing district lines, and the major (and uneven) changes in the distribution of Indiana's population, a fundamental restructuring of congressional district borders will be required.

Three of the state's congressional districts, the 1st, 2nd, and 5th, will probably show actual population losses for the decade. Thus, even if the state holds onto the 10th seat, these three districts will have to be expanded to meet population requirements. On the other hand, the 3rd and 6th districts

have shown the greatest population increases. Consequently, if Indiana retains its 10th seat, these two districts are most likely to be reduced in size.

If the state loses its 10th seat, no one really knows which district will be eliminated. But due to the demographic changes that we know of and the "one man, one vote" requirement, it is safe to say that the 2nd, 5th, and 7th districts are prime candidates.

## Conclusion

Indiana has much at stake in the upcoming census. Not only is the 10th congressional seat a major consideration; so are the federal funds distribution connected to the population numbers and the redrawing of state senate and representative districts (*IBR*, April 1989).

However, there is a strong possibility that a situation identical to the one that existed after the 1980 census will exist after the 1990 census—that is, Indiana fails to do as well as the rest of the nation. If this is so, the fate of Indiana's 10th congressional seat may not be decided until after the late fall of 1990.

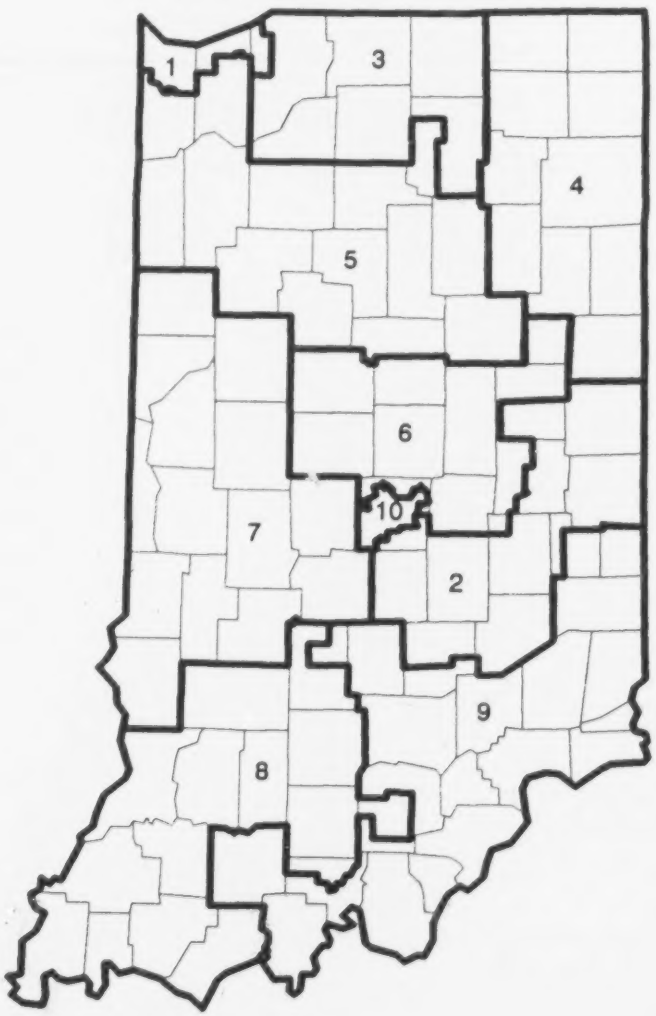
1. This margin of 88,257 people is determined by taking the difference between the priority values and Indiana's 11th seat and the 435th seat and dividing it by the multiplier for Indiana's 11th seat: (518,493-510,078)/0.09534626=88,257.

2. The 435th seat has been decided by an even smaller margin. In 1970, Oregon lost out to Oklahoma for the last seat by a scant 250 people.

3. The margin by which the 11th Indiana seat was lost, 7,625 people, was 0.14% of the 1980 population of Indiana.

4. The count review is a process in which the actual census results are reviewed by the state's Federal-State Cooperative on Population Estimates agency; if there is a discrepancy, a challenge is filed along with statistical proof.

**Figure**
**Indiana's Congressional Districts**

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# The Impact of Wages on Import Penetration; Manufacturing and the Role of Human Capital Widening in Indiana

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In this article we present the results of a two-part study. In part one we propose and statistically confirm the hypothesis that foreign exporters successfully targeted Indiana high-wage manufacturing industries for import penetration. We theorize that import penetration was most successful where the relative industrial wage failed to reflect productivity. In part two we theorize that foreign manufacturing plants use technologies similar to U.S. plants because of global capital markets and global transfer of technologies. We further theorize that the best opportunities for domestic productivity gains lie in investment in human capital. And we hypothesize that human capital widening—namely, increasing the proportion of the population who have a college or similar technical education—provides better competitive opportunities for advanced manufacturing installations than human capital deepening (attaining increasingly higher levels of technical skills through graduate training).

We demonstrate that higher manufacturing wages tend to be associated with human capital widening in the major industrial markets in Indiana. Moreover, after account is taken of possible interactions with external variables, such as ethnic composition of the labor force, female labor force participation, property tax rates, income, and wealth, human capital widening (by increasing the size of the college-educated population) appears an effective countermeasure to import penetration of high wage industries.

In other words, if our hypothesis is correct, rising industrial wages may attract import penetration, but increasing the proportion of the population with college education may lessen the impact of such penetration and may limit the loss of manufacturing jobs.

## Industrial Wages and Import Penetration

A series of theoretical studies by the Federal Reserve Bank of Chicago analyzes the probable impact of union/nonunion wage differentials on import penetration. The studies suggest that much import penetration can be traced to union wages rising above equilibrium levels.

One of the caveats to consider when pinning the entire blame for import penetration on labor unions is that labor cost as a percentage of sales is declining in high-wage manufacturing. This may mitigate the impact of differential wage levels on import penetration.

In the early post-war decades imports tended to penetrate mostly labor-intensive industries, because foreign exporters tended to use their more abundant factor, labor, while U.S. exporters tended to use their more abundant factor, capital.

Indiana is a good state in which to test the hypothesis of targeting because of the state's concentration in varied manufacturing and active participation in international trade. We found a wide range of weekly earnings, from a low of $276.95 in the fourth quarter of 1987 in Hendricks County to a high of $754.13 in Howard County.

## Hypotheses and Assumptions

We tested the hypothesis that nations that seek to penetrate American markets tend to target industries where wages are higher than in other U.S. industries, such as steel and autos. Such a strategy tends to maximize foreign exporters' comparative advantage. Steel imports, for example, rose from 13.7% of the domestic market in 1969 to 22% in 1981.

If this hypothesis is correct, then Indiana high-wage industries would attract foreign competition even if high domestic wages were to reflect higher marginal physical products. That is, we expect an inverse relationship between growth in wage rates and growth of employment, even after accounting for possible changes in factor productivity.

We assume that the international cost of capital is the same for all traders and that technology is instantly transferable. Namely, we assume that emerging industrializing countries obtain development loans and consequently can bid for the most advanced technological capital. We further assume that, in the period from 1980 to the present, no drastic changes in tastes have caused short-run technological obsolescence in Indiana plants. Finally, we assume that in the absence of import targeting, Indiana manufacturing firms would reflect national business conditions (the business cycle) except for random shocks. By exclusion, systematic divergence from national trends not shared by other industries in Indiana would have to be attributed to import targeting in the specific industry studied.

## Testing the Hypotheses

If the foregoing assumptions are correct, we would expect the following:

1. During the period 1981-1984, a period of rapid economic recovery for the nation but rising imports of manufactured goods and a rising exchange rate of the dollar, industries with high wage levels and rising wage rates would be expected to experience greater declines in employment than industries with low or falling wage rates. (The exchange rate index of the

**Figure**
**Definition of Variables**

| | |
|---|---|
| Difference between logarithms of employment in the period from 1981 to 1984 | DN1 |
| Difference between logarithms of employment in the period from 1985 to 1988 | DN2 |
| Difference between logs of average weekly manufacturing earnings between 1981 and 1984 | DW1 |
| Difference in logs of average weekly manufacturing earnings between 1985 and 1988 | DW2 |
| Log of mean weekly manufacturing earnings in county, in period 1981-1984 | LW1 |
| Same as above for period 1985-1988 | LW2 |
| Log of fraction of population over 24 completing college times 100 | LCOL |
| Log of median price of home | LHOME |
| Log of fraction of non-white workers in labor force times 100 | LBLN |
| Log of property tax rates in period one and period two | LTX1, LTX2 |
| Log of fraction of females in labor force times 100 | LFMN |

**Table 1**
**Partial Regression Coefficents**

| | *Independent Variables* | | | | | | |
|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *LW1* | *DW1* | *LW2* | *DW2* | *Constant* | *DN1* | $R^2$ |
| DN1 | –0.6082* | –0.4898* | | | 3.571* | | 0.4279 |
| | (–3.451) | (1.573) | | | (3.419) | | |
| DN2 | | | 0.7045 | 0.0089 | –0.4171 | | 0.0136 |
| | | | (0.467) | (.011) | (.439) | | |
| DN2 | | | –0.2358 | –0.3057 | 1.4176 | –0.488 | 0.3119* |
| | | | (1.371) | (.431) | (1.338) | (2.715) | |

*Note: T statistics are in parantheses; * indicates statistical significance.*

dollar rose from 94.5 in the first quarter of 1981 to 156.5 in the first quarters of 1985.)

2. In the period 1985-1988, a period of continued, albeit diminished, national economic growth and devaluation of the dollar, the differential growth rate—between the rates of change of 1985-1988 and 1981-1984—should have been greater for high-wage industries than for low-wage industries. The latter would have benefited less from the falling exchange rate of the dollar. (The exchange rate of the dollar declined from an index of 156.5 to below 95, going the full cycle from peak to trough.)

### The Sample

We selected 21 counties in the state with substantial manufacturing sectors. We obtained manufacturing employment, averaged quarterly, from 1981 to 1988, and weekly earnings in manufacturing, averaged quarterly, for the same time period. Growth rates were computed for each of the 21 counties. A time series-cross section specification was adopted. The data were obtained from Indiana University's STATIS data base, and estimates were obtained from National Decision Systems. Additional current data were received from the State Department of Employment and Training Services. The labels used for the variables are given in the **Figure**.

The regression results (**Table 1**) confirm the hypothesis that in the period 1981-1984 (hereafter referred to as the first period), when the dollar was overvalued, Indiana counties with higher relative wage levels and rising wage rates experienced proportionately greater losses in manufacturing employment. According to our regression results almost 50% of the employment decline can be explained by the relative level of and proportionate rise in wages.

When we move to equation No. 2 in Table 1 we discover that in the period 1985-1988 (hereafter referred to as the second period), when the dollar was devalued, the inverse relationship between proportionate changes in employment and wage levels no longer exists. In fact, both the size of the

**Table 2**
**Partial Regression Coefficients**
**Sample: Twelve Major Manufacturing Counties**

| *Dependent Variable* | *COL* | *Constant* | $R^2$ |
|---|---|---|---|
| DW1 | 0.711551* | 0.27232 | 0.39864 |
| | (2.303) | (5.179) | |
| DW2 | -0.6892 | 0.35743 | 0.1533 |
| | (.353) | (1.075) | |
| WR1 | 1.28783 | 1.12372 | 0.16662 |
| | (1.265) | (6.485) | |
| WR2 | 2.3140* | 0.9807 | 0.40706 |
| | (2.344) | (5.835) | |

*Note: T statistics are in parantheses; * Indicates statistical significance.*

partial regression coefficients and the t-statistics have significantly declined. Moreover, the negative partial regression coefficient for DN1 in period 2 clearly confirms the hypothesis that manufacturing sectors that were most affected by job losses in period 1 would gain most in period 2.

One may argue that if a dramatic statistical change occurs congruently with a relatively sudden and major economic event, such as the turnaround in the exchange rate of the dollar, then certain consequences may be imputed to that event. We may contend that the break in the statistical regime between the first and the second period was caused by the depreciation of the dollar, which in effect lowered U.S. wages in targeted industries. U.S. exports became cheaper and imports more expensive. Both targeted Indiana industries and other industries returned to their normal regimes; namely, both targeted and other Indiana manufacturing sectors were affected by the same economic forces and behaved accordingly.

The following may be noted. In the long run, wages must equal the contribution of each additional unit of labor to total revenue, or marginal revenue product. If markets are competitive, nationally and internationally, inter-industry wage differentials will tend to reflect differences in marginal physical product—the marginal contribution of each unit of labor to output.

Some industries, such as steel and autos, may wield more domestic market power as sellers of output. They may be confronted with monopolistic sellers of inputs (labor unions as well as sellers of intermediate products). In such an event, sellers of inputs may raise their prices above competitive levels.

Open international markets tend to reduce or eliminate the surplus that exists between marginal revenue product at the domestic monopolistic price and the marginal revenue product that would prevail at the global competitive price. It is logical to assume that the greater the surplus, the more vulnerable the industry is to international competition.

Devaluation and VRAs (Voluntary Restraint Agreements) defend the surplus against foreign competition. For example, if in the U.S., one extra hour of labor produces three units of output at $4, the equilibrium wage is $12. If the physical product is the same in Korea, but the wage is $6, Korea can target the surplus of $2 per unit by selling below the U.S. price of $4. This appears to have happened in Indiana in the second period.

Firms usually discontinue their least-efficient (or most labor-intensive) operations in response to import penetration. Thus, by raising productivity to six pieces per unit of labor, the higher wage becomes affordable at the international price of $2. Employment, however, declines.

### The Possible Impact of Human Capital Widening

Massive amounts of literature document the impact on income and wealth of human capital deepening—raising the level of technical and managerial skills by graduate education. There is scant literature on the impact on industrial wages of human capital widening—increasing the proportion of the population with college degrees. We theorize that such human capital widening may permeate through the industrial labor force. A more skilled, better supervised, and possibly better motivated labor force may raise productivity, which would be reflected in higher wages. While the proof of the hypothesis of targeting in part 1 was statistically straightforward, the statistical procedures in part 2 are of necessity more complex.

If the hypothesis is true, we would expect the relationship to emerge in the major manufacturing centers in Indiana. **Table 2** gives some credence to the proposition that human capital widening may indeed be associated with higher manufacturing wages.

One would not have expected a priori that college education would affect industrial wages. On the other hand, a high proportion of the population with college degrees may be a measure of the overall sophistication of the citizenry, who may demand and may get better secondary schools as

**Table 3**
**First Period Model**

| | Independent Variable | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *DN1* | *LW1* | *LCOL1* | *LHOME* | *LBLN* | *LTX1* | *LFMN* | *CNST* | $R^2$ |
| DN1 | | –0.4845* | –0.0321 | -- | –0.025 | –0.4480* | -- | 3.6561* | 0.6689 |
| | | (3.289) | (.368) | | (.084) | (2.819) | | (3.821) | |
| LW1 | –0.5904* | | 0.0222 | -- | –0.026 | -- | –0.2337 | 6.5369* | 0.3762 |
| | (2.375) | | (.138) | | (.066) | | (.668) | (6.026) | |
| LCOL1 | -- | –1514 | | .6950* | –0.1327* | -- | 5.3079* | –25.337* | 0.7177 |
| | | (.578) | (3.183) | (3.744) | (4.490) | | (3.534) | | |

*Note: T statistics are in parantheses; * indicates statistical significance.*

**Table 4**
**Second Period Model**

| | Independent Variable | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Dependent Variable* | *DN2* | *LW2* | *LCOL2* | *LHOME* | *LBLN1* | *LTX2* | *LFMN* | *DN1* | *R2* |
| DN2 | | –0.1486 | –0.0171 | -- | –0.0148 | 0.1611 | -- | –0.342 | 0.336 |
| | | (.802) | (.198) | | (.500) | (.799) | | (1.279) | |
| LW2 | –0.4493 | | –0.0993 | -- | –0.0103 | -- | 0.1209 | –0.8875* | 0.489 |
| | (1.271) | | (.597) | | (.248) | | (.335) | (2.137) | |
| LCOL2 | | –0.2515 | | .7964* | –0.1672* | -- | 5.9449* | –0.7229* | 0.7803 |
| | | (.948) | | (3.906) | (4.460) | | (4.971) | (2.138) | |

*Note: T statistics are in parantheses; * indicates statistical significance.*

well as more advanced technical education. *Thus human capital widening may generate a spillover effect.*

The statistical evidence in Table 2 is incomplete, however. The connection between industrial wages, human capital, and import penetration is circuitous. There are a number of intervening variables, and significant intercorrelation exists; high industrial wages may make college education affordable to more households, for example. The size of the sample limits the number of independent variables we can introduce within the available degrees of freedom.

Given these restraints, we attempted to build a simultaneous equations model for both period 1 and period 2. In this context the endogenous variables are DN1, LW1 (or DW1), and LCOL in period 1 and DN2, LW2 (or DW2), and LCOL in period 2. The remaining variables are exogenous.

*There is evidence that manufacturing companies are sensitive to high property-tax rates, and several Indiana companies—some partially foreign-owned—have sought to locate or relocate into counties with favorable tax rates.*

In **Table 3** and **Table 4** we give the estimates of the partial regression coefficients for each of three simultaneous equations in period 1 and period 2. Each of the three endogenous variables has a play in the system.

The first equation in Table 3 introduces two statistically significant variables: the relative wage, which is negative, and the property tax rate, which is also negative. This is as anticipated. There is evidence that manufacturing companies are sensitive to high property-tax rates, and several Indiana companies—some partially foreign-owned—have sought to locate or relocate into counties with favorable tax rates. College education has a t-statistic below unity, indicating that we can not be sure of the sign of the partial regression coefficient.

The equations are of the log variety; thus the partial regression coefficients can be read as elasticities.

Table 5
Two Stage Least Squares Period One

| *Dependent Variable* | *LHOME* | *LCOL* | *LW1* | *LFMN* | *CONS.* | $R^2$ |
|---|---|---|---|---|---|---|
| DN1 | 0.1619 | .01017* | -.4653* | 0.9711 | -2.777 | 0.5417 |
| | (1.081) | (2.378) | (2.589) | (1.118) | (0.567) | |

*Note: Only the first period is relevant for the present hypothesis; T statistics are in parentheses.*

The partial regression coefficients measure the proportional impact of the independent variables on the dependent variable. For example, other things being equal, a 10% increase in property taxes will cause employment to decline by 4.48% (10% x .448).

The second equation in Table 3 has only one significant entry, DN1, with the expected sign. Female labor participation and the proportion of blacks in the labor force have the expected signs but lack statistical significance.

The third equation in Table 3 introduces three statistically significant variables: LHOME, which is a proxy for wealth, LFMN, female participation in the labor force, and LBLN, the proportion of blacks in the labor force. The positive coefficient for LFMN—female participation—is an interesting and positive statement about the Indiana labor force. The other signs are as expected.

The analysis of Table 4 is similar to that of Table 3. There were no surprises. The $R^2$s in Table 2 are significantly higher for period 1 than for period 2, as hypothesized.

**Two Stage Least Squares**

The task now is to sort out the various interactions and combine all relevant variables into one equation. Each available analytical technique has strong points and some shortcomings. We opted for a simultaneous system solution, which yielded the equation in Table 5 for period one. Only that period is relevant for the present hypothesis.

*Investment in physical capital can not be neglected; a college-educated labor force is maximally productive when working with the most advanced physical capital.*

In Table 5 there are two statistically significant variables. LW1, the relative wage rate, is negative as anticipated. The partial regression coefficient of LCOL, the logarithm of the percentage of the population with a college degree, is positive. Unfortunately, the value of the coefficient is relatively low, though statistically significant. To some degree the foregoing analysis tends to confirm our hypothesis. Statisticians might argue that the relative wage, LW1, has dominated the loss of jobs, DN1, because of import penetration. This relationship might have introduced a downward bias, causing the sample estimate of the elasticity coefficient of LCOL to be lower than its true population value. We may note that the first order correlation coefficient between DN1 and LCOL is .332; the correlation coefficient between DN1 and LW1 is -.591.

**Policy Implications and Conclusions**

If Voluntary Restraint Agreements (VRAs) are not extended indefinitely and the dollar appreciates, industrial wages might have to move in stricter congruence with marginal revenue product at internationally competitive prices. Otherwise targeting of Indiana industries will resume.

The Indiana data appear to point toward increasing productivity by widening investment in human capital. A rising proportion of the college-educated labor force emerged as a statistically significant explanatory variable that made the targeting of Indiana high-wage industries less successful. However, investment in physical capital can not be neglected; a college-educated labor force is maximally productive when working with the most advanced physical capital. One might even suggest that human capital widening acts as a kind of economic vaccine, immunizing Indiana industry against excessive import penetration.

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